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Challenging Cavalier Perspective:
An Iconological Study of Visual Perception of Depth in Chinese Representational Space

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Abstract

Cavalier Perspective has previously been described as merely a pictorial technique of spatial representation within the history of Chinese painting. It is a common belief that this unique visual system is capable of providing an experience of three-dimensional spatial perception in both representational art and actual space, in a manner similar to technique of foreshortening and perspective in post-renaissance western art. However, as Chinese ancient artists have a different understanding of geometry and philosophy, it is difficult to either define the origin and nature of the technique itself or to identify which particular visual phenomena it is intended to communicate, when artists transform three-dimensional space into two-dimensional surface information.

The thesis begins by presenting an iconological analysis of the Chinese visual representation of space, in order to develop this visual study into a psychological analysis of the perception of three-dimensional form. To re-define Cavalier Perspective, it is necessary to firstly conduct a historical survey based on available visual evidence of both architecture and landscape representation. In both cases, the represented objects are transformed into flattened forms; and a psychological consequence thus appears involving the loss of a sense of depth in vision, which consequently contributes to the psychology of visual perception. To reassemble, and thus reactivate a similar perception in the representation of space, Chinese ancient artists are also believed to have created specific visual schemes to help reconstitute the perception of depth; thus rendering pictorial space perceptible.

Cavalier Perspective is seen as just such a perceptual system. Consequently, the theoretical part of the thesis conducts an iconological study by elaborating a hierarchy of form, technique, and scheme in the history of Chinese spatial representation. After that, a theoretical association is formulated between

iconology and visual perception, in which visual techniques are identified as potential cues to indicate depth. The translation between visual technique and depth cue appears so compulsive for both modern scholars and ancient artists that, to a certain extent, the progress of the visual arts could be described as the discovery of techniques for presenting depth through purposive patterns of form. Symbolic images are therefore seen to have their concrete formal basis established upon both pictorial idea and, more importantly, the psychology of visual perception.

The thesis aspires to challenge CP by means of this formal analysis. Whether it belongs to a simple technique or a sophisticated visual scheme of ancient Chinese artists; the representational space of geometry; the making of visual perception by means of technical implements; and the bodily experience in actual space, are all shown to be indispensible parts of the present research. A concluding case study of the Chinese landscape garden gives a further demonstration that the pictorial ideas and visual techniques that once contributed to the iconological and psychological understanding of Chinese painting have also delivered an idealised form of spatial perception within the garden - where the sense of depth is firstly eliminated, and then artistically reconstituted. In this way, the nature of cavalier perspective will therefore have been explored on two levels - in the form of both spatial representation and bodily perception in actual space.

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Chapter 1 Introduction

This thesis starts as a research of the psychology of Chinese visual culture. It seeks to understand architecture as a consequence of visual impression, a potential image that discloses the pictorial creation of space. It means to bring into inspection a "traditional" visual technique which is quite often claimed as an alternative manner of "perspective" in the Chinese visual culture as the *Cavalier Perspective* 散点透视. To distinguish this visual technique as a particular Chinese endeavour, it is widely believed that there are several "unique" principles at the command of Chinese ancient artists to create a multiple-station-point visual system. Numerous modern studies are inclined to accept that such a visual system is firmly secured by strong evidences in both Chinese visual culture and architecture, especially in the landscape garden for the latter. Superficial detection may find *Cavalier Perspective* not worthy of further scholarly classification.

However, this statement may be proved as over-exaggerated or even false. Daily access to this plausible visual system in landscape painting and actual gardens has made most of us blind, when taking it as a rigid convention yet ignoring the challenges that it once faced in the material sources, technical conquers, and artistic ingenuity. After going through available scholarship, one can immediately notice a contradictory fact that no sufficient information has been provided for this commonplace topic. Yet neither a justified definition nor the clear appreciation of style and design can explain it quite well enough. Intensive study may indicate that it has had a modern birth rather than an antique tradition in visual culture; it may be introduced from the area of sculpture in order to describe a three-dimensional treatment of body of mass.[1] So, it does not appear readily to correlate a visual representation of two dimensions, let alone the pictorial space created in ancient times. In fact, the

[1] Li Beilei 李倍雷, *Comparative Studies on Chinese Water-mountain Painting and European Landscape Painting* 中国山水画与欧洲风景画比较研究 (Rongbaozhai Press 荣宝斋出版社, 2006) p.292.

scholarship of a recent century has rejected penetrating insights into more reasonable and constructive aspects of this manner of visual perception.

If taking this uneasy situation into consideration, serious inquiries may arise. What is *Cavalier Perspective* in the sense of visual culture of space? Is it an alternative visual system to perspective? If it is really of particular characteristics to be an exclusive accomplishment of China, in what manner does it suffice visual features to indicate a strong sense of spatial depth? It will be best to let two witnesses start this inquiry.

When mentioning cavalier perspective, one may immediately envisage two Chinese media: landscape painting and garden. It is believed that Chinese garden makers, quite often literati scholar elites, have introduced principles of pictorial space which is the same as that of landscape painting. However, the style of pictorial space in painting changes; and thus it does not secure an identical principle that the landscape garden can borrow easily. In fact, a quite often quoted example of *cavalier perspective* in the form of architectural representation, Zhang Zeduan's *Qing ming shang he tu* (清明上河图, *Going Up the River for the Spring Festival*, Figure 3-28), does not provide a supposed overarching visual scheme. In such a realistic representation of architectural space, to identify the movement between multiple station points is not successful because the successive deployment of picture scenes in a horizontal sequence is a rather primitive method that can be seen throughout eastern and western art. Moreover, to suppose a station point may also defy the validity of the painting, due to the fact that to place a human eye in front of an image inherently contradicts Chinese philosophical thinking of the relation between representing an image and what is represented.

Another intriguing answer is that the landscape garden may learn from other styles that are not representational, but symbolic and so-called "self-referential." It actually proposes a later influence from landscape paintings of the Qing Dynasty which are beyond meanings of representation. However, architecture should have its solid form, even in a non-representational spatial composition; which means forms of architecture cannot transform freely and subjectively as those do on a painting. They still yield to the function of mass

structure to hold and define human activities inside and outside. So it appears that architecture in the landscape garden is not an effective way to demonstrate too many self-transforming pictorial ideas as later landscape paintings do. To simply regard architecture as an identical subject to visual art thus may not be a sound choice.

But obviously, a visual system of *cavalier perspective* embraces two different visions; one is experiential and practical, the other symbolic and pictorial. For practical concerns the vision subordinates aesthetic requirements; yet for pictorial understanding it transcends physical dimensions as well. What then was the vision in which Chinese pictorial space originates and concords architectural form? If architecture, when occupying pictorial space like sculpture and painting, may be understood as a "representational" art of vision of spatial depth, it must be more essential to know what is to be represented, and how the acquired vision, either realistic or symbolic, has been transformed into architectural forms in a particular style. These are the questions that the present work intends to answer.

The journey of examination starts as a comparative study between east and west to find available visual techniques through visual traditions of both. It expects that representation of architectural space answers what people discover in the actual space; that is the reason why images of it resemble qualities of physical bodies of architecture. Visual tradition to represent this kind of body continues in the west and keeps refurbishing its visual techniques to meet emerging requirements of realistic purposes. On the other hand, although ancient Chinese representation brings also a similar idea of pictorial space, its reoccurrence seldom appears in later paintings of scholar-elite symbolism. This diversion has laid a heavy aesthetical burden on built environment of the Chinese scholar elites to change their opinions on the usage of available visual techniques of C-P.

Through visual expedition surfaces this diversion. It may have various camouflages in both visual culture and architectural design. For visual culture we can make comparison in evidences from both sides; yet for architectural design seldom is this counter-connection at hand. It is partly because the

availability of Chinese ancient architecture to demonstrate a full tradition of vision; it is also due to a limited sphere that Chinese architects do have a wish to apply visual techniques in the design of artificial space. Where can we find an item of Chinese architecture that is not only of visual tradition but also subject to aesthetics that brings both architecture and its image into inspection?

Scholar-elite landscape garden thus appears to be a best choice to make this comparison possible. However it also has certain disadvantages. First, a scholar-elite garden not always pursuits a definite aesthetics and sometimes its political and economical context may overwhelm the potential delivery of visual impression in it. Because of that, a case study of scholar-elite garden may easily be far-fetched in its application of visual techniques of C-P. Second, the most ancient scholar-elite garden available in China is only up to the Sung Dynasty, yet the most well-preserved candidates are still subject to intensive revisions in their layouts. Even particular treatments of architecture in it can be taken as potential application of visual impress and techniques of C-P, highly we may confront a possibility that it is only a "recent" manipulation to feed contemporary tastes of aesthetics, rather than an ancient spirit of visual representation.

In disclosing C-P in the Chinese paintings and scholar-elite gardens, modern scholars keep searching its contexts, meanings and outcomes. To name it as a "kind" of perspective they strive to find connections in between. However this endeavour acquires no sufficient clarity and continuity. A history of such connection-to-be-built claims a failure in the continuity of this scholarship.

1.1 Background: History of Comparison between Two Visual Systems

Frankly to say, *cavalier perspective* of China and the scientific perspective system in the west has barely few early linkages except for the evangelism that has been done by Jesuit missionaries since the 17th century, when there was a simultaneous transition in the style of architecture and landscape in European countries from Baroque art to what has later been called *Chinoiseries*.

After the first translation of Chinese classics of philosophy into Latin in 1687 as *Confucius Sinarum Philosophus* by the Jesuit missionaries in Hangchou, Father Couplet helped to open a gate for westerners to look into the magic sphere of the Chinese subject-matter[2] for the universal composition of space, as well as the garden culture. Although, even long before Baroque, when the book *The Travels of Marco Polo* and the script of Jean d'Outremeuse, *The Travels of Sir John Mandeville*, had already laid an imaginative foundation of *Chinoiseries*, John Nieuhoff's report of business trade to the Dutch embassy in 1669 is claimed to be the first modern document that describes the real China of the late 17th century with its exotic impression, trustworthy but discursive provision of Chinese culture, urban scene and architecture including gardens. During that time, Europe was at the very beginning of Baroque with the great philosophical influence of Leibniz and Jean-Jacques Rousseau: the former calculating the world "like the Chinese sages, as a unity, a continuously rising scale of spiritual beings developing progressively" of the Enlightenment;[3] the latter endowed with a smooth transition into the reaction of "feeling" by an observation of human phenomena, a bodily sense, while abandoning the Cartesian spirit.

It is Rousseau who provides the word "*Picturesqueness*" (in Chinese, the relatively accurate translation is *Hua Yi*, the mind of picture) that many scholars find convenient to connect Chinese artificial landscape efficiently with the French *fabriques* garden[4] in a style called *Chinoiseries*. Rousseau is believed, quoted from Bernd H. Dams and Andrew Zega's book *Chinoiserie*, to popularise the idea of *picturesqueness* with the help of the conception of an Anglo-Chinese garden in France, and make a precedent claim of metaphysical

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[2] Clunas, C., *Pictures of Visuality in Early Modern China* (Princeton, New Jersey: Princeton University Press, 1997), p.18. In Bryson's book he also refers to this particular term in Chinese painting that all the objective matters – like bamboo, water and mist – are relegated a substantial lower status without the likeness of form, to go beyond the mimetic representation and into a concern of the self-referential symbols which purely signify other representation. And this point of view is based on Wen C. Fong's *Beyond Representation: Chinese Painting and Calligraphy 8th – 14th Century,* Princeton Monographs in Art and Archaeology 48 (New York, 1992).

[3] Reichwein, A., *China and Europe* (Original edition, Kegan Paul, Trench, Trubner & Co. Ltd, UK, 1925; Reprint edition, New York: Barnes & Noble, Inc., 1968), p.79.

[4] *Fabriques* is a French term for garden building. And the Italians adopted this word in their scripts. Both have great influence on the expansion of *Chinoiseries* into other parts of Europe, like England during Romanticism.

promenade in the garden as the process that depends on "our feet, hands and eyes."[5] Jesuit Missionary *Père Attiret's* letter, which was published in Paris in 1794, was the first complete literal description of a Chinese garden made during his work for the emperor *Qian Long* at the royal court in Peking. In the letter, he describes Chinese architecture as an ideal model, conceived as part of the landscape complementary to the *picturesqueness* of nature, while "... only the eye can grasp its true content."[6] And this is the first time for a westerner to claim the role of vision in the perception of Chinese architectural space. In the meantime, the first architectural representation for the Chinese garden in the west is done by Le Rouge, who offers a precious series of engravings of Chinese imperial gardens and palaces which is close to the original Chinese drawings. Thus, the mutual influences of art and architectural history between Baroque Europe and China are intensive and broad in many aspects.

Meanwhile, a literature study also provides another insight into the lateral relationship between Baroque gardens with a literati horizon (for them it is French salon) that is useful to the analysis on Chinese spatial representation. Salon society imposes, quoted from Michel Conan, mainly two strands of influence on the garden appreciation as "the royal fiction of the garden as enchanted island, and the nostalgic romanticism of the courtier's dream of an Arcadian world transmitted by the pastoral tradition in literature."[7] To make the nature more meaningful and alive, salon literati engaged themselves into the "metamorphosis of the living world." And this point of view would soon be discarded by Romanticism a century later with a more bodily connection with nature by means of the human naïve eye and a pure sensation of perception stemming from the body.

However successful the cultural exchange achieved, theorists still face the same problem of visual representation as we do today in accepting Chinese spatial composition without perspective, at least not in a way like space in the

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[5] Rousseau, Jean-Jacques. *Julie, ou, la Nouvelle Héloïse*. 4 vols. Paris, 1928 (1761).
[6] Attiret, P., *Lettres edifiantes et curieuses*, Paris, 1843, iii, p.787.
[7] Conan, M., 'Friendship and Imagination in French Baroque Gardens' in *Baroque Garden Cultures: Emulation, Sublimation, Subversion*, ed. Michel Conan (Washington, D. C.: Dumbarton Oarks Research Library and Collection, 2005), pp.361-62.

European paintings bears derivations from Renaissance. Unzer gives his three prospects or effects for the aesthetics of Chinese representation: first, the pleasing spectacles which stir the melancholy thought; secondly, the scenes which inspire alarm and fear; and finally, the production of astonishment to deceive and enchant the eye. This is obviously a version of symbolism, emerging themselves with a pure mind regardless of the physical existence of visual representation and architectural forms. It does not help to explain whether or not the presenting of an architectural body and spatial depth of pictorial space in Chinese visual culture does rely on a certain distinguished visual mechanism. Eleanor von Erdberg noticed that, if arbitrarily transforming the Chinese model into the European representation of perspective and shading, it would be no more its original character. [8] Europeans of the Baroque and Rococo eras would not be able to get a full understanding of Chinese spatial representation in which architectural forms seem to be just two-dimensional decorative elements that cannot be accurately calculated by any single visual techniques like perspective. In those Chinese artefacts, there is no real "depth" registered in the European mind.

The second wave to elaborate Chinese representation of pictorial space as a unique visual phenomenon starts with the studies of Ludwig Bachhofer (1923), Benjamin March's essay *A Note on Perspective in Chinese Painting* (1929), and a briefing report of Wilfrid H. Wells, *Perspective in Early Chinese Painting* (1935), in the first quarter of the 20th century. They begin the formal visual analysis based on modern methodology of art history. As they will notice later, there is little evidence that perspective does exist in Chinese visual culture because it lacks geometric knowledge, and the political and social-economical environment that are prerequisites for the birth of perspective as a scientific visual manner in the creation of pictorial space. So alternatively these scholars prefer to think that the Chinese may never wish to conquer the third dimension with any perspective in spatial composition. This is a truly insightful claim that even now Chinese scholars may fail to notice.

[8] Erdberg, E. V., ed. Bremer Whidden Pond, *Chinese Influence on European Garden Structures* (Cambridge, Mass.: Harvard University Press, 1936), pp.18-19.

Even now, the usage of the phrase *cavalier perspective* and other alternatives seldom appear in the writings of the western scholarship.

In this sense, visual techniques of Chinese pictorial representation must be understood in their own terms. The formal analysis on visual evidences for those techniques marks the birth of modern study on Chinese art history in the formal characteristics of delineation, modelling and composition with the universal validity, while associating the specific social culture with which certain visual form is produced.

Researches on Chinese visual culture flourished again in the west after the Second World War. Exemplary scholars include Alexander Soper, Osvald Sirén, Michael Sullivan, Max Loehr, James Cahill, and Wen C. Fong. Soper specialised in both Chinese art and architecture; he translated a large amount of Chinese painting manuscripts including Hsieh Ho's 谢赫 famous *Six Essential* for pictorial space in painting. As later we will encounter again, Hsieh Ho believes that the life of painting counts on *ch'i yun sheng t'ung* 气韵生动, translated by Alexander Soper as "animation through spirit consonance."[9] According to Osvald Sirén in his study of the Chinese Scholar-elite garden, this magic circulation is "the magic breath of Nature's own pulsating life," which concludes this essential principle with an all-encompassing mixture of metaphysics, realism, cognition and psychology. Michael Sullivan in his numerous writings gives a brief description of the particular perspective used in the painting. He explains that the handscroll requires an infinite number of vanishing points, and each compositional layer's "front face" is always parallel with the picture plane with its own vanishing point. Loehr famously divides the history of Chinese visual culture into three phases: representational, supra-representational, and commentatorial

[9] In a note of Maggie Keswick's book *The Chinese Garden: History, Art & Architecture*, a detailed definition for these four-word terms is given as: *Ch'I*, meaning roughly 'life breath', 'spirit', 'vitality', 'activity of the spirit'. It is not, says Siren, "an abstract concept, but an actual phenomenon," and it "animates everything in nature – including human beings." *Yun* means 'resonance', 'consonance', 'harmonized vibrations'; *sheng* means 'life movement'; while *t'ung* means 'physical motion' or 'animation'. Thus the phrase could be rendered as 'vibration of the vitalizing spirit and movement of life' (Keswick, M., London: Academy Editions, 1978, p.206).

art.[10] In his point of view, Chinese visual culture in the early stage does propose an inclination to make faithful resemblance to actual vision towards the natural world; but things have changed since the 12th century when ancient artists began to seek for visual quality of pictorial illusion. Loehr's division imposes deep influence upon later scholars like James Cahill, and Wen C. Fong. A more scientific description of the perspectival representation in Chinese Scholar-elite painting could be found exemplarily in Wen C. Fong's insightful analysis on the transition of spatial composition in the paintings from pre-Song to post-Yuan (8th-14th centuries).[11] In his other book *Riverbank: from Connoisseurship to Art History*, Fong repeats the aforementioned thinking that it is impossible for Chinese ancient artists to manipulate pictorial space in a perspectival manner.

A more systematic definition for *Cavalier Perspective* conducts the research in the terminological way. In terminology, the word *Cavalier*'s intrinsic vulgar Latin form *caballarius*, means horseman or later a castle tower with gunfire, which latently stands for highly locating and over-viewing. In the book *Studies in Italian Renaissance Architecture*, Wolfgang Lotz discovers Cavalier Perspective in Filarete's illustrations; however, his explanation is of a typical sense of western art. Lotz (1981: 9) identifies that this manner proposes "placing the vantage point, not on the floor of the building represented, but on an imaginary higher plane ... [Thus] it can be observed that, as a result of its use, these drawings already contain elements of the so-called cavalier perspective." The last category of the application of the 'higher plane' of cavalier perspective, more or less similar with bird's-eye-view mapping, develops the particular drawing method of oblique projection for the design of fortifications. Consequently, *Cavalier Projection* does characteristically relate, however, with disparate functionality, to Chinese *Jie Hua* 界画 (ruled drawing) for their placement of images on the 'higher plane'. *Jie Hua* has been proved by Chinese ancient manuscripts to be ranked as one of the categories of

[10] See Max Loehr, 'Some Fundamental Issues in the History of Chinese Painting' in *The Journal of Asian Studies* 23, no.2 (February 1964), p.186-92.
[11] See Fong W.C., et al., *Images of the Mind: Selections from the Edward L. Elliott Family and John B. Elliott Collections of Chinese Calligraphy and Painting at The Art Museum* (Princeton: The Art Museum, Princeton University, 1983).

Chinese traditional drawing, and further intensively used in the architectural design of the Scholar-elite garden.

On the other hand, as for the usage of *perspective*, it would be unwise to thoughtlessly imagine that this word bears the same meaning in both western and Chinese art, as *Cavalier Perspective* has not endured two contrary struggles as western perspective does after its Renaissance birth: encompassing homogeneity vs. cosmological discontinuity, and contemplation of uncertainty vs. geometric definition of infinity. *Cavalier Perspective* in this manner could not even be called a perspective at all. In this sense, it is more interesting to notice that, even within the context of the everyday discussions among scholars and students of art history and architecture in China, the word P for *Cavalier Perspective* normally has a more general but relative meaning of *Projection*, not *Perspective*.

After arduous expedition through history of scholarship of Chinese visual culture, now a fundamental blockage sadly stands right in the way. We have to admit that to discuss *Cavalier Perspective* is problematic if directly comparing with *perspective*. As disclosed, they could not be directly compared at all. Their relations for most scholars are based on analogy, not on their equivalent functions and features, like two brothers fighting each other because they could not understand what the other is talking about at all. For *perspective*, *Cavalier Perspective* becomes a really mysterious rival. To solve this problem, it is really in need of a breakthrough; and an insight lives in visual culture itself.

1.2 Methodology: Iconological Study and Psychology of Visual Perception

As this thesis aims to solve the inquiry-worthy birth of spatial depth in Chinese visual culture, it is intended to examine a way of making a deduction from available visual examples of art, conducting a survey on ancient visual images, disclosing both difficulty and possibility in presenting spatial depth in visual art, finding traces for certain visual techniques that dominate typical representation of that time, confirming the progress in Chinese visual art, and

thus identifying manners of spatial depth in visual representation. It implies a methodology that study on architectural history has long forgotten, in which art and architecture are never really set apart from each other. As Joseph Rykwert (2008:7) says in the preface of his book *The Judicious Eye*: "painting and sculpture once counted with architecture as 'visual arts', or did so well into the nineteenth century and even the twentieth ... since the middle of the twentieth century, however, the impact of painting and sculpture on how the man-made environment looks and feels has been weakening". Now, the present work is intended to reclaim the autonomy of the study of architecture back into art history, again as a topic of visual art.

Visual culture is by its nature a story about artistic conquer of three-dimensional space by means of the two-dimensional image. It is also a tradition with an ultimate goal to resemble the actual vision, which becomes available as soon as we allow it to come into the eyes in the form of light. As this kind of light is shaped and thus subordinated to anything that can obstruct its extension, both the mass and transparency of an object become the dominant features in such a visual perception. Both can also be taken as a more simplified feature, the form. Gestalt thinkers in this sense prefer visual perception rather as a game of form: to see the form in an object, and to detect an object's location in space. It thus provides the main body of visual perception in space.

To present such a perceptual system on a two-dimensional surface, it requires two consistent capacities. It begins with a prerequisite that one be capable of *observing a three-dimensional object and suppressing its spatial features onto a pure flattened veil of vision.* When enjoying a picture, one may have no difficulty in discerning the objects painted as reminders to the space that they are supposed to occupy. It seems that the imagery object did have a certain volume, and located somewhere at the distant place. Both situations can be identified as appearances of spatial depth. Architectural representation communicates perfectly a spatial sense to observers as the painted structures seem constructible enough and thus appealing to a judicious but logical eye. It is true that, by means of landscape painting, beauty of the natural environment is no more beyond imagination. When comparing such kinds of images with

the actual vision of the human eye, one may suddenly notice a leading subject in transformation. In other words, what we see is not what we believe to have seen. Then how can one judge the visual perception of space as a genuine one?

As in a human's eye, nothing truly appears as it actually is, due to the simple fact that nothing exists in the eye but somewhere else in space; instead of a sense of space and volume, what we see is a conglomerate of visual sensations, such as light, colour, and the most essential, form. The distribution for such sensations does not secure a spatial perception; but rather, as visual psychologist James J. Gibson believes, spatial perception happens intrinsically in a vast "visual field," full of visual sensations. Hamilton takes spatial perception rather as knowledge, far more complicated than any sensation acquired by human instincts. It is a process of learning how to see and understand what is seen. In other words, the key to spatial perception must be found in the knowledge of the mechanism for such a visual system. Accordingly, the first step in the study of pictorial representation addressed in this thesis is meant to originate spatial perception back into the visual field, in which an object and space are transformed as a play of visual information - a play of form.

When artists create pictorial space on surface, they are, intentionally or not, doing the same thing as that of originating spatial perception. It is an ordinary phenomenon that an apple painted on paper looks like the apple to be painted. They are not the same actually, but why have observers still sensed the resemblance? The image of the apple has no volume; neither is it located in the actual space. To perceive it as being located in the distance from the eye is to presuppose that the image of an apple has a feature of spatial depth. It certainly goes against a normal point of view. But why does it still seem effective to present the spatial perception of depth? In this sense, to originate vision back to the visual field only provides a chance to see its nature; yet it cannot explain the resemblance very well. There is still a missing piece in the jigsaw puzzle game.

If referring back to the representational image, one may find certain clues. For example, light casts a shadow when obstructed by the form of an object;

colour may shift when its projections diffuse. And what is more explicit, the form of an object changes its appearance at various angles to the eyes. The last phenomenon is rather interesting, because there are large numbers of evidences in the history of art that such an alternation to the appearance of form has been repeatedly applied into representational art. In other words, form becomes a *purposive pattern*, as art historian Michael Baxandall proposes. Meanwhile, there is a clear progress in the western art tradition of acknowledging functions of form for the purpose of presenting spatial perception. Such a progress parallels the arduous discovery of visual techniques, with which artists can compensate better the loss of spatial features when an actual object is transformed into an image. In each time of stepping forward, artists struggle to solve the temporary difficulty in pictorial space to cope with actual vision.

And this gradual progress demonstrates a second capacity of visual representation of spatial depth: *finding appropriate visual techniques*. *Perspective* is of course a visual technique as such; so does it seem to the multiple-station-point scheme that the Chinese visual system is believed to have. But as *perspective* is restrictedly based on a geometrical and mathematical thinking of vision, Chinese visual culture, when lacking concrete evidence to ground itself as a particular kind as such, is still a capable visual system to present spatial depth in pictorial space. It should somehow have similar visual techniques to those being used in western art. It is this second prerequisite which makes the Chinese counterpart available on the level of visual culture.

However, Baxandall's *pattern* is not sufficient; because to discover spatial depth in visual image, we have to associate that image with a specific pattern that indicates visual technique. Sometimes we may still be lost in the searching for such association even if we had already known there is a hidden pattern.

The connection is not ready to build. Gestalt art scholars like Ernst Gombrich and Rudolf Arnheim prefer a much more psychological and aesthetic association in which the metaphoric analysis at the end engenders a spiritual

and anthropomorphist offspring. In their points of view, perceiving space of both pictorial and actual nature is more or less the result of a mental process which intertwines personal milieu and the ability of poetic thinking. It is this poetic point of view which has resisted a formal observation on *Cavalier Perspective* for a century. To avoid such an emotional yet rough generalisation, we must take form on its own behalf, to faithfully detail what a spatial form has indicated based on its physical body rather than imagination.

Thus, the present study inclines to hold a position as what German art historian Erwin Panofsky has supplemented to iconographic study on pattern and form; His study greatly contributes to the association between visual phenomenon of spatial depth and the form and pattern of visual techniques. Panofsky divides such a system of iconographical interpretation into three levels; and he even fairly describes the difficulties and fatal traps when analysing a specific visual material:

> When we wish to get hold of those basic principles ... we cannot hope to find an individual text which would fit those basic principles ... To grasp these principles we need a mental faculty comparable to that of a diagnostician ... '*synthetic intuition*,' ... which may be better developed in a talented layman than in an erudite scholar.
>
> However, the more subjective and irrational this source of interpretation ... the more necessary the application of those correctives and controls which proved indispensable where only an *iconographical analysis in the narrower sense*, or even a mere *pre-iconographical description* was concerned. When even our practical experience and our knowledge of literary sources may mislead us if indiscriminately applied to works of art, how much more dangerous would it be to trust our intuition pure and simple! Thus ... our practical experience had to be controlled by an insight into the manner in which, under varying historical conditions, *objects* and *events* were expressed by *forms* ... (Panofsky, 1972:14-15).

"*Narrow sense*" for Panofsky is not about symbolic but basic meanings of pictures, and "*pre-iconographical description*" can only treat basic *forms*. So comparing with Arnheim's psychological analysis (in Panofsky's point of view it is the higher-level *iconographical synthesis*), Panofsky further complements another two lower but essential iconographical phases, *pre-iconographical description* (pseudo-formal analysis) and *iconographical analysis in narrower sense*, with the whole system shown as:

Table 1 Iconographical Interpretation Structure (Panofsky, 1972:14-15)

Object of Interpretation	**Act of Interpretation**	**Equipment for Interpretation**	**Controlling Principle of Interpretation**
I. Primary or natural subject matter – (A) factual, (B) expressional, – constituting the world of artistic motifs	*Pre-iconographical description* (and pseudo-formal analysis)	*Practical experience* (familiarity with objects and events)	History of *style* (insight into the manner in which, under varying historical conditions, *objects* and *events* were expressed by forms)
II. *Secondary* or *conventional* subject matter, constituting the world of *images*, *stories* and allegories	*Iconographical analysis in the narrower sense* of the word	*Knowledge of literary sources* (familiarity with specific *themes* and *concepts*)	History of *types* (insight into the manner in which, under varying historical conditions, specific *themes* or *concepts* were expressed by *objects* and *events*)
III. *Intrinsic meaning* or *content*, constituting the world of *'symbolical' values*	*Iconographical interpretation* in a deeper sense (*iconographical synthesis*)	*Synthetic intuition* (familiarity with the essential tendencies of the human mind), conditioned by personal psychology and *'Weltanschauung'*	History of *cultural symptoms* or *'symbols'* in general (insight into the manner in which, under varying historical conditions, *essential tendencies*

			of the human mind were expressed by specific *themes* and *concepts*)

In this structure two more pre-levels are provided with different focuses; the first approach is on form while the second is on object and event. The latter two actually indicate a routine to apply a certain form for a certain reason; and this perfectly explains Baxandall's *purposive pattern*. In other words, a pattern must have imposed a form in a certain situation for a specific purpose: form is to be purposive. For visual representation of spatial depth in Chinese visual culture, it should have similar functions as well.

For example, a central-foreshortened pictorial space in the Buddhist fresco at Dunhuang (see Figure 3-18) is no longer just a poetic background of religious themes and concepts that visual media discerns. In the level of iconographical synthesis, we can explain it as a realistic background to hold a Buddhist ceremony and the scenes of the sutra story. But this explanation does not help us notice the insufficiency of painting technique which fails to provide an exact depiction of spatial depth. The first and second levels of Panofsky's iconographical interpretation only concern forms, objects and events (pattern); so the failure of realistic spatial depth in the fresco will be elaborated in the present work regarding only how much sense of the visual perception is conveyed, how it is done and how many drawbacks painters will still have difficulty in conquering. As perspective is not at hand, the painter of Figure 3-18 has to make a compromise by replacing it with a frontal projection and thus breaks the consistency between architecture and surrounding landscape.

The Iconological study of Panofsky makes it possible to link Chinese representation of architecture with its concealed meanings by which mere images deliver social, economical, political and philosophical backgrounds. Such a contextualist way of analysis embraces full range of possibilities of birth of particular images, trying to make discovery of intrinsic analogies out from particular philosophy. It is truly an "aesthetical recreation" in a manner of artistic deciphering.

However, it also has so inevitable a possibility to exaggerate the process of deciphering over meanings of the piece of visual art that Panofsky's iconology becomes self-satisfied with a unidirectional enterprise, a world view to explain totality of symbolism of visual art through particular philosophy. This point of view is highly criticized by modern scholars of art history like Gombrich and Hermerén, who have no inclination to take Panofsky's mere techniques of deciphering as part of true spirits of art history. Painting for them is intrinsically out of the reach of philosophy by its own; and Michelangelo's works may have only feeble connections to Neo-Platonism. As Panofsky always tries to interpret images as with symbolic meaning and as a consequence of such dominating relation, his manner has confronted with furious attacks on its mindless pushing-forward of methodology of symbolic idea. Another problem of contextualist analysis of Iconology is that sometimes a same meaning after deciphering of contextualization may equally apply to two distinctive styles of images. This coincidence brings confusion in identification.

"Aesthetic recreation" means no attempt to make illusory foundations that never ever exist. Consequently an iconological study on Chinese representation of architecture has to make all effort to avoid such detraction, and without excessive philosophical deciphering it only focus on formal basis and its foundation of technology. A best way to solve it is to make categories of visual medium in order to identify possibly technology of drawing for particular styles of representation. It has concrete mutual influence on and from the development of science and technology of local communities. Artists may have idiosyncrasy in making representation, but they must have suitable and reasonable techniques at their disposal to operate with. Techniques derive from needs of everyday, not of philosophical enjoyment. So the iconological study on Chinese representation of architecture can be established firmly on a materialized basis rather than ideological deduction.

However serious defects Panofsky's Iconology may have in art history, several advantages of it are unacceptable to be ignored as well for later discussion on Chinese visual representation of space as an iconographical

pattern of spatial depth in terms of visual techniques. Firstly, any visual method should be verified by the achievement of a certain effect, both visual and philosophical. Where no identical context predominates, a same "visual intention" still survives and helps to explain the phenomena, like the prevalence of foreshortening in both Chinese and European early visual evidences. This kind of analysis has long been facilitated by western scholars like Ernst Gombrich and Erwin Panofsky, as they have done so much of it in their iconographical juxtapositions of the representational meanings among Egyptian, Greek and Renaissance paintings. Secondly, to go back to the primitive ground of visualisation means to re-discover the integrated procedure of seeing and perceiving. Visual evidences like fresco and painting would be simplified to several basic visual traces and characteristics, if using Gibson's definition *gradients*, to classify the reason why artists in a certain period developed step-by-step the technique of visual representation in aim of philosophical purposes, and how the pre-existing deficiency in representation could be successively overcome. Still taking foreshortening for instance, whether proportional or malproportional, constant or discontinuous, it will definitely deliver a dramatic change in the style of quarter profile of the human figure, just like what happens in the transition between Byzantine and Gothic icons. Thirdly, to make an inspection on visual culture is intended to presuppose a high dependence upon the traces of what and how to "see" the specific form. This is really helpful to a more situated but intensive research, especially when perception of architectural space will always be attached to other human senses like hearing, smelling and touch, all of which dominantly exist in the written documents of literature and the corresponding poetic discussions around these topics. In such an integrated perceptual system, "seeing" a form is just a trivial clue; it is perhaps not even a chief feature in some of these selected spatial representations. This inclination goes against the purpose of the proposed iconographical research; which, by means of purposive patterns of form, searches more values in visual effect and disclaims any aesthetic and poetic feeling in Chinese visual representation on the first two levels of iconographic study.

The access to the fruitful outcomes in visual culture over painting and literature in the west part is the fourth advocate. Scholars in visual culture have already begun to compare west and east visual phenomena. Norman Bryson concerns the visual progress of dematerialisation in Chinese water-mountain paintings. Gombrich's (2002: 128-9) claim that the Chinese method for visual representation may focus not primarily on the perception of images nor the plausible narrative, but something that can be described as "poetic evocation." Craig Clunas (1997) culturally and physiologically investigates many interesting factors of visual evidences in Chinese ancient manuscripts. For architectural theory, Alberto Perez-Gomez has already allocated perspective in a broader span of visual culture, with a systematic suspicion over proportion, module and their immutable "invisible" system for the demonstration of architectural space, in his book *Architecture and the Crisis of Modern Science*. Their methodologies and insights do provide a broader basis for further research. Last but not least, it would be much better if choosing a real architectural space as a case study to demonstrate the potential application of visual techniques, borrowed from visual culture into architecture. No matter what visual media has been implemented through history and how fruitful it might be in the form of fresco and painting, the only real and available sample in terms of Chinese architecture is the landscape garden. The garden seems, at first glance however, not a proper example because spatial depth may not be a definite goal to achieve in the garden. However, opportunity is gladly offered if the question could be articulated as a visual phenomenon.

Even if the initial purpose of a certain garden doesn't indicate manipulation of spatial depth, then it will be stil intriguing if an iconological analysis on it could find visual traces existing nowadays imitating ancient visual culture. If it does exist, we should expect it translated and hiding in the texts of the surviving architectural treatise *The Crafts of Garden* 园冶.

In this way, the mechanism of spatial depth becomes an iconographical and theoretical study in search of a purposive pattern of visual techniques for that purpose. The methodology in the present work thus prefers both historical survey and theoretical deduction, both well-defined by the two prerequisites

for visual perception of space aforementioned. The former is mainly formulated by an iconographical view in search of any selected evidences of visual techniques in Chinese visual representation of spatial depth. Spatial depth thus must have *purposive patterns* as well that can be disclosed by iconographical analysis towards specific examples. It is a foundation for any further theoretical deduction of art style and pictorial idea in the second phase; this intends to answer if the Cavalier Perspective in Chinese visual art is a visual technique or a scheme to represent spatial depth.

Theoretical study of represented space further requires a conduct into psychology of visual perception, in which the purposive pattern of spatial depth will be translated into psychological and cognitive terms. Upon the proposed results, it will finally go back to examine the Chinese visual system in the aspects of geometry and practice, as well as social culture. While the first-stage survey is meant to find *form* for pre-iconographical description in Panofsky's system, the later theoretical deduction proposes to regard the available form as a pattern of object and event, and put it under various historical conditions, specific themes or concepts, by which the present work may deliver to a certain level its intrinsic meaning as a visual symbol for iconological synthesis.

1.3 The Mapping of the Thesis

The ultimate purpose of the present work is to explore the fundamentals of Chinese visual representation of space as a utilisation of spatial depth.

The main body of chapters is built upon the problematic terrains of art history and visual culture, perceptual psychology and cognition, and, more important, architectural theory and landscape garden treatise. It is a story of both practice and philosophy in which architecture would respond according to its form. From Chapter 2 thus begins a journey of western art, in aim to find available visual techniques for distance that may emerge in Chinese counterparts. The searching into the west is constrained by this purpose. It is intended to conclude the development of spatial depth in western visual art in the name of a series of visual techniques, rather than a narration of art styles of

historiography. Each visual technique is believed to yield to different social cultures to define their own practical values; yet one must bear in mind that, however diversified the visual schemes may be presented, each visual technique shall demonstrate an advance for artists to suppress three-dimensional objects into two-dimensional pictorial space. Accordingly, after a brief introduction for the mechanism of distance and the meaning for converting distance into visual representation, the rest of the main body of Chapter 2 is inclined to provide the results after the searching for visual techniques. It thus enlists seven "pillars" standing out on the ground of Chinese visual representation for the purpose of spatial depth, starting from the fundamental constituent of *form*, to further manners of manipulation as *juxtaposition* and *overlapping* of plane, *movement*, *proportion* and *scale*, *foreshortening*, *perspective* and the ultimate *projection*.

It may seem rather awkward to make such a list of visual techniques in the beginning of the present inquiry. However, visual technique is the indispensible linkage between "form" and "scheme" in the iconological diagram. Form is composited consistently according to the usage of certain visual techniques, and is further enhanced to demonstrate a specific visual scheme. In other words, visual techniques are intermediate in the first two levels of Panofsky's iconological system.

Following the finding of visual techniques in Chapter 2, it is intended to discover how they organise spatial forms in the pictorial space. In Chapters 3 and 4, readers shall encounter a selective overview of the history of Chinese visual representation of space, which becomes a full range of applications of these visual techniques into the Chinese context. When disclosing whether certain historic exemplary images have placed a requirement to spatial depth, and further elaborating the utilisation of one or more techniques enlisted, one may notice that Chapters 2 and 3 are not only consistent but also essential. Without the detailing of each visual technique by means of "form" in the former chapter, the later deduction based on it is subjected to high suspicion.

Chapter 3 targets at Chinese visual representation of architecture, while Chapter 4 mainly talks about spatial depth in landscape painting. Both

architecture and landscape are favourite schemes for representing space in the history; both intend to provide a critique on formal study, rather than a general description of advanced iconological synthesis. Such critique is firmly built upon the availability of the seven "pillars."

From the point of view of a westerner, to name a painting as "painting" is quite different in Chinese visual culture; it thus highly suspends the validity of perceiving spatial depth in Chinese representation in the way that western art proposes. The first part of Chapter 3 introduces the diverted significance of Chinese representation in order to secure a possibility that any addressed spatial depth in the research may not be inclined to imitate its actual resources. The early-stage Chinese spatial representation will follow. It is the author's point of view that this kind of visual art in aim of architectural representation no longer survives. It can be divided into three parts: image of secular space before the Tang Dynasty, frescos of religious transformation in Buddhist caves, and realistic representation of spatial depth in the ruled architectural drawing around the Sung Dynasty. These three levels can be further sub-divided; and the author will explain the justification for each period and style in terms of its magnitude of spatial accomplishment.

The elaboration of landscape in Chapter 4 partly overlaps Chapter 3 in the time line. However, as we can see later, selected exemplars are examined differently according to their various visual techniques. As landscape does not always mean to take its form as constructional and representational as that of architecture, it is necessary to know the origin of landscape painting as a mapping system, and how these two visual systems correlate through art history. The later birth of Chinese painting theories and sayings casts light upon the study when presenting identified treatises for making spatial depth in the paintings. It really helps to formulate a general view that there is truly a gradual development of pictorial composition; following them, ancient artists learn to make pictorial space recess into the distance, more and more delicate and sophisticated. However, one must be able to clarify that form, especially in Scholar-elite painting, may betray the perception of naturalistic spatial depth. Max Loehr also disfavours a study of representation on later images when he opens a new orientation for them as the commentatorial style. This

tendency becomes so influential after the late Ming that it is of no meaning to examine spatial depth in the paintings descending from Tung Chi-chang and his "Great Synthesis."

We are happy to regard the first part of the present work as a journey of re-discovering hidden linkage between visual techniques and form. But how is it especially when associating with visual schemes? As "scheme" is far more ideological and symbolic than the simple "form", it is thus necessary to establish another bridge across visual techniques to connect "form" and "scheme". In other words, how can "form" and visual techniques contribute to a certain visual scheme in favour of spatial depth? The second part of the study urges for an answer to this question. It is intended to identify any Chinese ancient visual schemes that may work as potential media of spatial depth, the "first prerequisite" for such a perceptual system. It relies on an intensive study on psychology of visual perception in space. This visual mechanism is deeply hidden in our "images of mind," the way to see the image and the surrounding world. As aforementioned about it, when artists suppress actual space onto a flattened surface, they are not simply deliberately hiding certain depth indicators behind the image in an artistic sense; what they actually do starts from the very beginning when the visual world has been transformed into our eyes, in a visual psychologist's term, a visual field. A visual field is by its nature flat; it is thus the origin of painting. In order to perceive spatial depth in pictorial space, one must firstly be able to know how the actual world is transformed into the visual field when all indicators of spatial depth are usurped and replaced by artistic visual techniques. Chapter 5 aims at this. As it discloses both the philosophical nature of the appearance of the world and the depth representatives in visual perception, what it actually prefers is a logical translation in such a creation enhanced by the purposive pattern of form. And such a kind of pattern will surely be associated with other visual issues like size and shape of form, and geometrical thinking of the location of a station point, as well as the variation between gradients of form which leads to the perception of spatial recession.

Starting from Chapter 5, the phenomena of visual perception within the Chinese own context of form, visual technique and scheme have begun to be

explained, and Chapter 6 puts Chinese resources of representation into further inspection on schemes. As Chinese ancient artists were not equipped with sufficient knowledge of geometry, their creations of spatial depth are not believed to be highly constructional as is western visual culture like perspective. But it is still possible to reinterpret the Chinese visual system in other simple but fundamental terms, 'station point' and 'visual direction', as disclosed later. And both the two terms presuppose the involvement of body; by which the relationship between body and image will influence the perception of depth in pictorial space. With these "primitive" visual techniques, artists may install enough visual models to transform both normal vision and ordinary view of image into unquenchable and even delirious visual effects; the most exemplary are mirror-effect and binary visual system. Form turns out not to operate as same as in western counterparts, neither in its appearance nor functionality. This is quite unique to Chinese visual culture; for it involves the movement of body in a way that is different from the snap-shot system and motion parallax in western cognitive procedures.

Chapter 7 is a case study of the application of psychology of visual perception into the understanding of actual architectural space. As it forms the last part of the thesis, it must present the possibility that Chinese ancient artists may impose the same pictorial idea in architectural design as in pictorial painting. Actually, the validity of such application would be in danger, if no clarification to the relation between these two categories of visual culture is rendered. As western architects have a long tradition of introducing the visual techniques of art to guide their designs of space, like the "birth and rebirth of pictorial space" after the early Renaissance's birth of perspective as John White exposes, this may not be true in the Chinese situation. The first half of Chapter 7 is inclined to seal up this breakage by putting into inquiry and reconfirming the specific relationship between pictorial representation of space and the making of an actual landscape garden, as well as that between painter and garden maker. Successively, a firm treatise of architecture is specifically examined according to all the fruits we gain from the expedition through chapters. By a selected case of the *Lingering Garden* in Suzhou, China, the craftsmanship of the Chinese landscape garden is thus translated as

an intentional building process in terms of appropriated visual techniques to accomplish the presentation of spatial depth as a visual phenomenon.

Although this thesis might inevitably bear a certain implicit judgement of architectural formalism, it is intended to provide an insight for visual perception in both pictorial and actual space. The author also notices a possibility that people might take the conclusion as a matter of fact that can be equally applied to any other Chinese visual art and architecture. In fact, this visual mechanism of spatial depth is and should be just one of the potential explanations to discover the magic of Chinese ancient artists and architects when creating two-dimensional pictorial space out of actual visual perception of space. Its validity lives in the restoration of architectural thinking back to the main body of art history; and its ingenuity emerges in the twilight of the combination of architectural perception and psychology of vision. The former allows the present study to be reborn as an artistic topic, and the latter provides insight that firmly grows out of the human body itself, which bravely confronts its physical and fundamental requirement of "seeing form," rather than any aesthetical opinion which quite often turns out to be misleading, self-satisfied and of arbitrary judgement.

Chapter 2 Pillars of Pictorial Space: Form and Visual Technique of Distance

Visual representation of space in the iconographical point of view is basically a game of form. This form must be organised in a particular way to present a specific visual scheme or event by which form becomes more complicated due to its symbolic meanings. In other words, one can say that it is the manner of organisation that endows symbolic forms. And this organisation of form is what is called "visual technique." It is widely accepted that perspective is an incomparable achievement in western pictorial art that has succeeded in conquering the realistic representation of actual space since the Renaissance period. When claiming perspective as an appropriate method to illustrate the recession of space into the distance, it is clear that perspective makes use of the consistently scaled foreshortening in forms. In this sense, perspective must be one of the effective visual techniques for the purpose of presenting spatial depth in pictorial space. As Panofsky (1997) notices, perspective in its nature is a "symbolic form."

Form will have symbolic meaning as soon as it is organised not according to its primitive nature and appearance, but attached to a particular visual scheme in which nature and appearance shall be altered according to the special needs of visual evaluation. To a certain extent, all the visual techniques should have symbolic meaning as long as they contribute to these needs. Such kinds of needs are diversified throughout history, and it is thus expected to have a series of visual techniques accordingly. For the purpose of presenting spatial depth in pictorial space, how many of them and in what manner they have ever been applied turn out to be the two urgent questions to answer.

However, before this inquiry about how visual techniques endow symbolism in correlating form with visual scheme, one has to confront another more fundamental question: what are the natures of spatial depth and of distance? As they appear quite measureable in the actual space where one can judge

them by the length of a foot span or by tools like a ruler, to present the appearance of spatial depth in representation is a totally different story. To evaluate spatial depth in the representational art seems not so convenient, because such a spatial sense is utterly eliminated when transformed in representation. Thus, the symbolic forms under the influence of visual techniques must face an awkward beginning, in that there is in fact no such a form that is of distance, and volume of object. To understand how a form without sense of space finally regains its symbolic meaning of spatial depth, one has to firstly examine the mechanism of perception of distance and of distance in representation.

2.1 Mechanism of Distance

The manner to understand distance is diverse in the history of visual art. Its functionality in visual perception may be sought in philosophy, geometry, and cultural study. That is why visual evidences of different styles sometimes concord for their similar visual features, however with distinct intentions. To historicise the whole system of it thus requires a different way of narration. A better solution is enlightened by Heinrich Wolfflin when he generalises five pairs of concepts for his *Principles of Art History*, that for a most general category of representation it is not necessary to strictly follow its "imitational content," but rather to rest on the mode of perception which is rooted in a single kind of representational art through the centuries.[12] In other words, any particular visual technique may possibly be found in any periods of art; because such an application is totally dependent on the necessity of it to maintain certain artistic purpose. A simple evolution following time progress thus seems not so efficient. Based on that point of view, a brief historical paraphrasing of visual technique(s) for spatial depth in western art from ancient Egypt to the modern times is obviously necessary; however, in order

[12] Wolfflin, H., *Principles of Art History: the Problem of the Development of Style in Later Art*, trans. Hottinger, M. D. (New York: Dover Publications, 1929), p13. In this text, Wolfflin defined "imitational content" as how a certain art style could be differentiated from other immediate neighbours, like the naturalism of the 16th century as per that of the 17th century. He also provided five pairs of basic concepts as the general problems in art history, listed as *linear to the painterly, plane to recession, closed to open form, multiplicity to unity*, and *absolute and the relative clarity of the subject*, the content of which provides a source of the similar structure of this chapter.

to identify each of them, the development of the criticism on visual perception is expected not to be delivered entirely according to a collective timetable, but based on the selected evidences of each visual feature and the discovery of each for the hierarchical progress in presenting spatial depth.

Then a discreet examination of key visual techniques will find those visual phenomena by which Cavlier Perspective (CP) is generally discussed deeply associated with seven key features. These seven "pillars" are developed in a progressive and hierarchical order, from a single object to the whole conglomerate of forms, gradually advancing in accordance with distance representation: shape, juxtaposition/overlapping, movement, proportion/scale, foreshortening, perspective, and projection. All of them appear as the main topics in Gombrich's Constructivist theory, Arnheim's *Gesltalt* thinking of pictures, or Gibson's perspectivist knowledge of formal representation. All have a major influence on visual representation of space, and could be equally identified in both western and eastern representational art. As this writing preserves, spatial depth in pictorial space must be a game of representational form. But how could an observer secure such a mechanism of depth as an appropriate manner to understand a work of art? One must seek the answer in the nature of distance and the object itself.

2.1.1 The Nature of Distance and the Distance of an Object in Pictorial Space

As normally believed, distance is the result of a numerical description of how far apart objects are. It refers to a physical length to describe the objects close to or far away from each other. But the "visual distance" registered in pictorial space is by no means a physical one that can be scientifically measured. The understanding of its representational meaning is in accordance with the subject and artistic thinking of the world. Truly, a comprehensive account of the history of philosophy on distance is well beyond the scope of our immediate content; however, it is still impossible to escape from its critics, especially when in pursuit of the representational evolution of how to perceive the distance by specific visual techniques.

Classic Greek theories which propose that the eyes emit the visual force are so-called *extromission theories*. Plato's *Timaeus* provides an authority for classical philosophers that vision is a "fire" representing the relationship between mathematics and nature. Reality is thus mathematical. The Stoics firstly suggest that visual forces be distributed in the form of a cone, with its summit located at the eyes. The form of visual cone which presupposes a distance from its apex to the bottom thus stands for the representative of the whole visual system. Aristotle believes the process of "seeing" activates this medium between object and human eye, while the latter becomes capable of projecting a mental force from the soul. In this way, he asserts such a transparent medium. Although transparent, there is a great progress in acknowledging the nature of distance. Distance is still a philosophical thought; nevertheless, for Aristotle it is no more a void but a "materialised" basis for the occurrence of vision. Later, the first unified description of the mathematical model of distance for vision appeared in Euclid's *Optica*, which diagrams vision as straight lines and distance is endowed with a more consistent geometrical structure. One can say that, under the influence of Aristotle, Euclid and Arabic science, a firm basis has been built for the theoretical Optics that is equally shared by medieval scholars in the Franciscan order like Robert Grosseteste, Roger Bacon, and John Pecham. Bacon further comments that there are nine requirements for vision, one of which is "an appropriate distance." This is a thorough explanation of medieval times for the fact that vision is incomplete if without distance. Bacon says that, for perception, it is not enough if a sensible thing is only placed on the sense organ; and then he paraphrases Aristotle's thinking as:

> ... every sense acts by extramission, that is, by the propagation of its power in the medium, so that the sensible species [coming from the sensible object] will arrive better proportioned to sense; and it is ennobled by the species of the sense, so as to conform more closely to [the nobility of] sense.[13]

[13] This paragraph is extracted from Roger Bacon's *Perspectiva*, Part 1, Distinction 8, Chapter 1. See Lindberg, D.C., *Roger Bacon and the Origins of Perspectiva in the Middle Ages* (Oxford: Clarendon Press, 1996), pp.130-31. For a more philosophical discussion about light

And for a typical Byzantine representation of optics and art, the interpretation of distance must be related with Neo-Platonic philosophy as well. For the study of André Grabar, Plotinus acts as a major spectator in the middle ages and his philosophy is fully expressed by mediaeval art.[14] Plotinus deals with aesthetic issues with a typical metaphysical thought – being as the one. He believes even the infinity should also have a definable form; so the soul in all dimensions should be comprehended "by form from beginning to end." In his work on *Intellectual Beauty*, Plotinus claims that "all is transparent ... Every being is clear to, and within, every other." As he puts the whole over the part, the composition becomes spiritual, not mechanical as in classical art. The idea of the whole is more "credible" than that of the part. Then, it is impossible to identify the differences between parts; because all is shown homogeneously on a single level. The only register that matters is the "true" sizes of things. It is so to the distance of parts as well. In the sense of the sublime, not that of beauty and reality, distance loses its formal ground and as a result appears to be subordinated and compressed.[15] To echo Bacon's thinking, no matter how far to be placed, the object shall still be judged to be of the same size, while the only difference is the angle of the visual pyramid. It is the "immoderate distance" that causes a smaller appearance of the remote object. To diminish the size of the immoderate object far away is an unacceptable "error" (Lindberg, 1996: 227).

In the descriptive geometry of Desargues, distance could be measured in a fathomable way by millimetres or centimetres. Objects will be translated with three variables in Cartesian coordinates and registered with exact locations to decide which one lays in the front or at the back. But for visual perception and representation in pictorial space, distance loses its objective dimensions while acquiring as exchange an indefinite physiological basis in the retina, through the nervous transmission to the cortex. This process means that the distance in

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and sight as a symbolic metaphor in Latin West, one can turn to *De trinitate* of Augustine of Hippo, who was deeply convinced by Neo-platonic emanationism over the topics like the Trinity and the process of sense perception between body and soul.

[14] André Grabar, *Plotin et les origines de l'esthétique médiéval, Cahiers archéologiques*, Fasc. No. 1 (Paris: Vanocst, 1945); Demus, *Byzantine Mosaic Decoration*.

[15] The relation between Neo-Platonic Philosophy and Byzantine Art has been largely examined by P.A. Michelis in the essay under the same title. See *The Journal of Aesthetics and Art Criticism*, Vol. 11, No. 1 (Sep., 1952), pp. 21-45.

visual space is non-Euclidean and thus cannot be judged by the actual references like the length of an arm or the foot span. Both relate with the physical body, not with visual appearance.

Panofsky in the point of view of an art historian embraces the idea that human perception is not built upon the x, y, z mathematical axis but a spherical field of vision. And this artistic explanation may be deeply rooted in the study of visual psychology around the 18th century. During that time, the British scholar George Berkeley believes that a man born blind would at first gain no idea of distance. Although he could rely on the physiological measurement of the aforementioned arm, the set of thoughts and sensations in the mind of a blind man is not quite the same as normally believed; for such an idea is not attaining certain circumstances of actual experience. (Berkeley, 1910: 31) Distance for Berkeley, as well as anything placed in distance, could not even be seen; because distance, as imposed with a certain length in-between, becomes an illusion that may not suggest an ordinary idea of perception. In such a visual system, those tangible things that can be surveyed physically will be deprived of objective meaning, and replaced by visual impressions of image. Consequently, the key question of "what is Distance" must correlate with its milieu; that is, what the distance means in specific circumstances.

The quest will be accordingly transferred to how one can visually have a spatial perception of distance. Obviously the distance in an ordinary mind is the distance of an object; to be more accurate, the perception of the discrepancy between where objects are located. All are the consequences of light, by means of retinal images which are projected into the eyes. However, it is not true that the framework of spatial perception in pictorial space is of the similar consequence. It will be helpful to consider what Hans-Lukas Teuber (1966) has pointed out, that the perception of distance will operate successively, only if at three levels: [1] the immediate direct perception of visible spatial relations; [2] the compensation for the change in spatial relations produced by movement of the body in space; and [3] the representation of spatial relations not immediately apparent. (Vernon, 1970: 121-22)

The first level includes the basic understanding of objects, for the perception of distance and the visual configuration among them. Objects will be transformed into shape and profile by means of vision. The second takes a broader inspection, not only into the object itself, but also the interrelationship between the object and the viewer who receives and makes a judgement on the impression of distance. There lies the fundamental understanding of how the movement influences the impression of depth. Most Chinese scholars who advocate the justification of CP and correlate "poetic" meaning will find certain plausible evidence here. However, the inquiry has to be suspended for a while; for there are two fundamental questions unjustified. Firstly, it is still unclear whether movement is the only possibility to make compensation for spatial perception; on the other hand, can CP be an appropriate compensation in terms of movement? If not, what does it truly mean? The thesis is intended to answer these questions from Chapter 5 on a more theoretical basis. The last of Teuber's levels is more sophisticated because of the involvement of a cultural background, from which symbolic and iconographical meanings are derived and transformed frequently. Meditation on the perception of distance is always faced with a misleading impasse, not because of the limitation of the available visual evidence, but because of the falsified selection, which should be paid attention to. This bias in explaining Chinese visual culture has become much more harmful when trying to identify CP by simply tracing literal clues in manuscripts, while ignoring iconographical evidences. A solemn literature survey contains too much implicit presupposition in which cultural prejudice and misjudgement prevails. While taking literature as an assistant resource, the study addressed in this writing is expected to pay more attention to visual evidences, and to judge the success of representation of spatial depth by means of what exactly one can see in pictorial forms.

2.1.2 Levels on Perception of Representation of an Object and the Method to Convert Distance into Representation

Subsequently, there is a very large discrepancy between the references of distance in visual perception and those in the physical world. As long as it is still with a study on form of object, the meanings of the object per se can be

different in many aspects. Therefore, regarding the perception of distance in visual representation, the procedure to perceive an object deserves further explanation.

According to different perceptual situations, Vernon (1954) categorised four levels for the perception of objects: 1) perception of real objects; 2) perception of representation of real objects; 3) perception of abstract shapes and patterns; 4) perception of symbolic material. As experiments of vision show, during the process of the second level of perception, the identification of an object relies on the accuracy and clearness of the representation, like a painting, to depict the object. In the sense of psychology, this process can be classified as a kind of "projection," to project the meaning of an object into its representation. During this procedure, if the visual representation is obvious and clear enough, the observer will automatically surpass this level and immediately connect the representation with the real object to be represented. They synthesise the meaning so equally and directly that observers would have no difficulty in understanding the representation, just as if they are watching the real object itself, which belongs to the first level. Taking the representation of an apple for instance, it is not as easy to identify an apple from Cézanne's watercolour as from a classical still life, because the profile of the apple in Cézanne's painting could not be easily clarified. The transformation of the meaning of Cézanne's apple is thus impeded; and observers would have more sense of viewing a picture, rather than gazing at a real apple. This principle could be equally applied to Vernon's third and fourth levels, only under different minor conditions.

The perception of a real object happens in actual space; which means such a perception in terms of distance is unlike that of the other three levels which prevail in pictorial space. Perception of representation requires to transform an object into a form; perception of abstract shapes and patterns aims to organise forms with specific visual techniques; and to perceive a symbolic idea in shape and pattern must be a result of the association with a particular visual scheme like that of presenting spatial depth by perspective. As the following chapters will disclose, for the progression of the latter three levels in the visual art, it is

of great importance to know firstly how the distance of a real object can be converted into the purposive patterns of form in pictorial space.

As previously discussed, the conversion of distance is basically a visual treatment of an object. Any real object to be represented should firstly be transferred into a series of visual traces that are easily operated within the later process of representation. Furthermore, it should imply the information about the relations between objects, and the ones between objects and an observer's eyes.

This double-fold requirement confirms a fact that distance itself is a manageable object to represent; thus the same levels on perception of an object should be equally applied on the perception of distance. To paraphrase such levels, it leads to the question of how to manipulate the relations between real distances, forms of distance, abstract patterns of form as such, and any potential symbolic meanings of it. Form of distance is the result of the alteration on the appearance of real distance into identifiable visual forms. They should be simple and clear enough, but at the same time preserving the basic information of real distance. Abstract pattern is a far more sophisticated replacement of the single form, when organising it by means of visual techniques. In aim for the abstract or symbolic perception of distance, abstract patterns of form will be attached with a specific visual scheme and thus "distorted". On that level, conscious influences such as culture and tradition trigger a change in visual perception of distance. In so doing, the ultimate goal is no longer the findings of visual technique, but of what purpose is a work of art when representing spatial depth in a particular style. And it is at last a truly cultural issue. This presupposed issue is so dynamic and everlasting that even a pre-set representation can be taken as being changed when it is still under construction, long before the process of viewing it. Visual methods like movement will find their justification here.

It is thus expected that different combinations of visual techniques may have been applied to various art styles and artefacts according to the four levels of representation with individual artistic purposes. The first three levels of representation of distance are not of a cultural issue. Within these three levels,

there is no difference between a work of eastern art and that of western art. In other words, to identify a particular form and visual technique in two kinds of art is quite the same. Accordingly, as this research aims for the visual representation of distance in pictorial space, it begins with the second and third levels: to examine how spatial depth is transformed according to both its forms and visual techniques.

The meanings of Chinese visual representation of spatial depth are thus expected to inquire any potential form and visual technique when disclosing each of the selected visual evidences. Just as Panofsky talks about the three hierarchical levels of form, event (object) and theme (concept), such an inquiry will not be successfully answered unless visual evidences could be originated back step by step, with levels of corresponding iconographical explanations, in a way to answer how it resolves a certain predicament of visual perception of distance. And this is the spirit of the iconological study on Chinese visual representation of spatial depth in pictorial space.

2.2 Mechanism of Form and Visual Techniques of Distance through the History of Western Art

2.2.1 Form in the Visual Composition of Space

It is quite clear that the development of visual culture is a process of upgrading visual technique to resolve any further visual deficiency which may cause the representation not to appear identical to what is being represented. Thus, the pivotal step of such a configuration of distance undoubtedly starts with the most basic constructional element, which turns out to be the form. Because of this, one has to restore any complex representation back to the elementary forms, to the stage where such a representational form may perhaps even not introduce any visual impression of distance.

Shape/Form, for J.J. Gibson in the sense of Gestalt thinking, is the irreducible basis of object, as well as plane.[16] As Rudolf Arnheim observes, shape is so

[16] Gibson, J.J., *The Perception of the Visual World* (Massachusetts, CA: The Riverside Press, 1950), pp.18-19. As distance can be regarded as equal to object, Gestalt thinking on object can

elementary and essential a characteristic of object perceived by eyes that it refers to almost all spatial aspects of objects. However, in the primordial state of it, form denies location and orientation; and this feature makes form a perfect starting point for visual representation of distance. Gibson (1950: 8) further claims that the elementary impressions of a visual world are those of surface and edge. Shape concerns ultimately the boundary of an object; and during the process of pictorial restoration, a real object will lose its three-dimensional state and become a two-dimensional surface, which is form. In 1709, Berkeley went against Newtonian cognition of the world and tried to restore visual impression back to the original visual phenomena of elementary planes, regardless of their depths. This procedure echoes the experiments of visual scientist Myron L. Braunstein (1976: 22). In his study, the perception of flatness is principal; and for the perception of depth, the very primordial impression must be a flat picture-like image. No matter what an object might be, solid or overlapping, one could only identify it by the visual planes. It is thus judged not by the hand, but by the eyes. There might be a tiny discrepancy between it and what Berkeley describes. However, with more discreet mind, one can find that, although Berkeley proposes the "planes" be more attached with the sense of tangibility other than visual impression, what he actually believes is that such tangibility is based on the theoretical deduction from Greek philosophy, in which vision has "hands" to grasp an object in the formation of a pyramid. For that, to have an uttermost visual impression, an object could do nothing but become a series of planes and boundaries, losing their impression of depth. That is why Egyptian art in this sense stands right on the twilight of regarding the significance of form about-to-be-transformed from object and distance.

For Egyptian art, it is as Panofsky claims (1955: 58), not *aspectus* ("view") at all, but a geometrical plan. The figure-arraying method of ancient Egyptian artists renders, in a limited sense, either a completely frontal projection, or a pure profile style. This style has a very simple feature: all the forms are illustrated and organised not in terms of how they resemble the represented

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also be well applied to the study of representation of distance as well. In later text when claiming visual impression of object, it is intended to propose that distance should be objective to have the similar visual impression.

"appealing" to the eyes, but according to their epistemological nature. For ancient Egyptians, nature should be expressed not by the resemblance, but by the identical order in the appearance of structure. Consequently, all the human figures, for example, turn out to be systematically distorted and flattened in favour of an enhancement on the illustration of profile. In other words, a human figure should be able to be identified as that of a human immediately. Form in this sense is the simplest but most trustable means. As Gombrich elaborates in ancient Egyptian art, the outlines of feet, the twisted head showing only one side, the frontal projection of the chest and abdomen, the side profiles of legs, all of these are dominated by profile: the primordial form to represent what it should be. In this way, ancient Egyptian artists have an effective guidance in the formal composition, while integrating a constructional meaning, rather than a visual one. And, based on it, spatial dimensions and body movement are established according to the gestures which are also the consequence of "composition" of figures' profiles. Egyptian artists make use of a network of equal squares to allocate the selected body points of human figures like ankles and elbows. For them, such a grid precedes the whole visual configuration and thus is far more important than the simple presentation of form. It intends to teach apprentices how to "make" imagery figures with a system of forms that is ready to calculate, not taking it as an imitation to visual appearance.

The treatment of frontal image in classical antiquity later becomes more sophisticated. With more enthusiasm in the anthropometric mimicry to the human body, ancient Greek artists were inclined to observe nature with a realistic idea. In transferring the meaning of form, they developed a more naturalistic technique which supplants grids of profile that once predominated earlier art. A new obligation enhances the signification of form: to imitate the real world as it "seems" to be requires the presentation of the volume of object. Spatial depth is for the first time a worthy dimension in pictorial space. The three-quarter profile appears to be the favourite of the public as they are obliged to seek more truth of the world by means of seeing volume and distance in space. This time, artists would not prefer to keep a rigid system of grids to organise forms; but rather, they develop a new criterion of proportion

and scale to correlate different sizes of form together into a whole image. More details about this progress will later be disclosed separately.

Whether to use the Egyptian grid or the Greek proportion to organise form does not shake the dominance of form in representing object and distance. With more advanced visual techniques, artists even find form more convenient to deliver the symbolic and religious meaning, not only of the object, but possibly of the whole visual system as well. Consequently, such kind of formal manipulation does not fade away; it even regains prosperity during the later art of Mediaeval Times, especially in Byzantine Art. Panofsky designates the style of mediaeval art as "planar." However, by means of this flatness, mediaeval art does not aim to achieve the same structural relation between a particular form and the whole representation as Egyptian art does. Egyptians believed that the truth of nature exists in profile and were urged to illustrate it *per se*; while mediaeval styles, after the influence of Greek thinking, acknowledge depth as the nature of space. However, mediaeval painters devalue the possibility of a realistic rendering of three dimensions that Greeks were crazy about; on the contrary, they preserve and treat flattened figures arbitrarily, and thus severely suppress the visual impression of space. The Greek illusion of the actual volume of an object, especially the three-quarter profile, is totally abandoned in Byzantine art in favour of the linear contour and the flattened distribution of colour. Panofsky depreciates that there is nothing of optical meanings in Byzantine art due to the absence of any effective means for realistic modelling. To apply this "antique" technique in mediaeval times is because of a dilemma. The artists still want to introduce a genuine visual system to demonstrate the three dimensions, even though they are of no interest in the delicate measurement of the human body. Without realistic intention in dimension, they formulate a customary "module" out of actual experience when seeing objects. Such a module can be equally applied to all representational forms, to measure and distribute them by strictly following certain regulations. Mediaeval artists thus in fact choose to integrate the planar image with a more limited proportional system. Such a coarse integration ironically helps Byzantine artists successfully avoid the rigid Egyptian configuration of frontal profile, placating different planes at ease in

one visual representation by using a more customary module, a unit of size, although such a module is not comparable to that of scale in the precedent Greek art.

Beyond this, when form starts to co-effect with other visual techniques like scale and module, it has been a bearer of symbolic meaning; it does not matter whether spatial depth is sacrificed or not. In other words, even the absence of spatial depth by means of form has become at this level a purposive pattern of symbolic meaning. In Byzantine art, planar figures could be systematically distributed one after another, while illusionary depth is in exchange of a symbolic meaning of theology. It is intended not to copy nature realistically but to organise planes according to what the spirit is expected to perceive. As Gombrich advocates, when comparing with classic counterparts, medieval artists are truly more erudite for how to depict what they see, but more obedient to what they feel. By the middle of the 12th century, visual perception retired to such a level that the three dimensions of pictorial space were degenerated to no more than bunch of ornamentation on the surface. Scenery has become just a bunch of pictorial fields with purely ornamental strips; and strips have also been reduced to their original meaning as mere lines: it concludes the last breath of antique endeavour in realistic illustration of space by means of form (Panofsky, 1997: 50-51). The precious key is re-discovered in Renaissance representation but never recovers to its full prosperity. Alberti's comment stands for a few discoveries of that period. In his book *On Painting*, Alberti emphasises the importance of the contour and outline of the body, while using the word '*circumscription*' to deliver the spatial relations. [17]

The new expectation in organising forms survives in the works of Cézanne who starts a new paradigm for cubism and later modern art. He intends to facilitate a conceptual "flatness." However, such flatness is not derived from the process of originating the visual perception of an object into more simple forms; on the contrary, Cézanne inclines to use it to represent pictorial space by eliminating any conventional explanation to the represented space. Such

[17] For Alberti, the artful representation could be divided into three concepts: *Circumscription*, *Composition* and *Reception of Light*. Composition means a method to put together surfaces and bodies in a harmonious system. By saying reception of light, he proposes that one can observe a clearer detail of various colours as a result of the reception of light.

spatial translation is "primitive" and immediate, as cubist artists claim. They try to develop an analytical approach by which objects in the pictorial space are interpenetrated by an overall rhythmic accentuation of forms, while in the meantime dissecting spatial objects into elementary pieces of surface which they are possible to re-combine later for the revelation of any potential symbolic meanings.

In this session, the study has gone through the first stage of representational art, which is to translate real objects into forms. And it has also been explained that form itself is insufficient to represent the meaning of object and distance unless certain additional visual techniques can be supplemented. Egyptian, Greek and Byzantine artists prefer to use different techniques to enhance the function of form; what they supply to form are all about the particular system to organise it, regardless of grid, scale or module. However, to know more about potential techniques, one must begin with the most basic system: that is to place two forms together. And it is not difficult to notice that there are only two ways for that purpose: juxtaposition and overlapping.

2.2.2 Juxtaposition and Overlapping of Planes

Following the reduction of an object into form, it is time now to know how to deal with the combination of two surfaces in one visual representation. Basically, two surfaces can be placed together side by side, in what is called "juxtaposition" or "superposition". When one covers the other to make part of the latter invisible, this phenomenon means a process of "overlapping". Both mechanisms have a preposition that locations of the surfaces, as soon as they become part of the representation, are not moveable in order not to influence the perception of the whole structure of the representation. In other words, the visual meaning of the representation is expressed statically.

Two representational surfaces placed together are more or less like two retinal images of a single object. Optic experiments have demonstrated that it is the convergence of the sights of the eyes which makes three dimensions possible; which means that the tiny discrepancy between two retinal images will deliver the perception of depth. If either image is suppressed, spatial sense is lost. In

the sense of visual representation of pictorial art, it is same when two surfaces are integrated in a certain way to create the perception of spatial depth. And in pictorial art, this primitive manipulation of form is from the very beginning endowed with a certain degree of symbolic meaning.

Ancient Egyptian artists organise the profiles of different parts of the human body within one representation by means of a grid. Tomb paintings and sculptures are exemplary for such composition. However, with careful observation, those tomb paintings seem very strange for a modern viewer; for it is "unreasonable" to juxtapose separate body parts arbitrarily while keeping their profiles which are seen from different directions. Gombrich (1950) analyses that the typical outlines of feet and legs are both represented as from the side. The fact that pairs of limbs unnaturally face the same direction is against actual experience, and the connection between these pairs with the frontal-projecting profile of chest and abdomen seems also ridiculous. The twisting head shows once again a side view by which the outlines of the nose and mouth are convenient to lineate by their profiles; while all of them juxtapose the frontal projection of the eyes. The identical feature can be found in Egyptian representation of space. To illustrate a water pond surrounded with trees, an Egyptian painter will firstly draw a quadrilateral form (the pond), and distribute triangle symbols of equal-size (the trees) along the brims of the pond. Interestingly enough, as Arnheim (1956) notices, some of the trees are placed "in" the quadrilateral brim while others are "outside". Sometimes the trees hit the sides of the pond perpendicularly, while others are at the corners obliquely: they are extending outwards to all directions. It appears to be an ugly configuration for a modern observer who accepts realistic manners of representation, unless we can take into consideration the meanings of profiles for ancient people.

As the image of a tree must keep its profile intact to present it firmly standing upon the brim of the pool, one has no choice but to place the root attached to the line of the quadrilateral. It is of no importance to be concerned with spatial direction and depth; neither is it to alter the frontal profile of the tree, as long as the Egyptian believes that the image of the tree means it is no longer a tree

if its form is changed a little bit. All they want out of this image is a reasonable spatial composition with all the elements easily identified. In so doing, the image turns out to be incredibly natural. From this point of view, Egyptian visual representation could be understood as a "lifelike" art with uttermost truth [Figure 2-1].

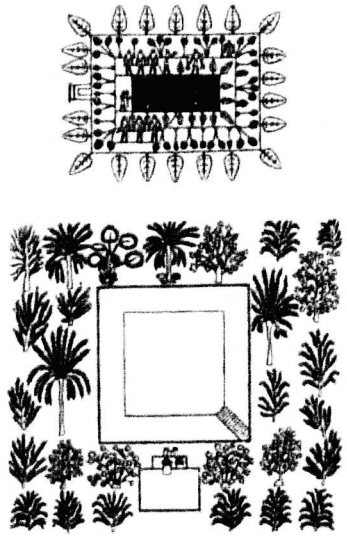

Figure 2-1 Drawings from the second edition of Heinrich Schafer's Von agyptischer Kunst, 1922

Greek philosophical thinking of the world still prefers not an integrated composition but a discontinuous one, even if they favour a realistic representation of an object which denies placing parts arbitrarily. This point of view is demonstrated in the decoration of pots. The arrangement of several equal-sized figures that are placed at different levels can be seen as a routine technique in the works of wall paintings of both Pausanias and Plygnotus. William M. Ivins Jr. in his book *Art and Geometry* reluctantly quotes a standard archaeological explanation for such a composition as an "imperfect" method to indicate pictorial depth. Ivins (1964: 30) actually goes against this idea; for him, a possible answer may be found in the fact that Greeks intend to preserve a "tactile awareness in a pictorial statement." What Ivins has confirmed is that the technique of juxtaposition of form is the consequence of visual culture by which the natural world could still not be perceived as a collective matter. And this trend survives and gains rebirth in Hellenistic imagination. Space constructed during Hellenistic times comprises the remaining oppositions between body, non-body and the gap between them.

The continuum of the mega-structure of the world is too difficult to be established. This epistemological understanding results in a manifestation of space as a simple yet unsystematic group of superposition and overlapping of forms. For Panofsky (1997: 48), the perception of Hellenistic space is just like "looking through a row of columns," constructional but not systematic as Egyptian visual space is.

So is it for the spatial system of the middle ages, although with different purposes. Enlightened by antiquity and thoughts from the east, mediaeval artists dismantled both the extensive landscape and the enclosed interior space into slices of superposition and juxtaposition. The object, as well as the continuous depth of space, is once again translated into simple icons of form that are oriented along the surface. Space in Byzantine art has been split into a series of scenery against a self-reliant background. In front of such an overarching veil, all forms can be re-organised according to their inherited theological meaning; which means the compositional meaning of form in representation is not structural but symbolic. It is the same for the classical Byzantine architecture in which not only the niches on the walls but also even the whole church are envisaged as the self-enclosed space. To push this style further, Romanesque art fulfils the completion of this kind of representational system when admitting iconological meanings only exist in mere immaterial surfaces of line and form. Spatial depth thus seems less definable as a whole but more like a semi-transparent veil to embrace the potential juxtaposition and overlapping of spatial sections. This is true even for High Renaissance sculpture which, instead of provoking the imagination of the beholder, understands the whole imagery structure as an obstructive overlapping of pictures. Therefore, Leonardo da Vinci denies the three-dimensional construction of sculpture, by stating that a statue like a human body should be seen as "a combination of two reliefs, one showing the figure from the front, the other from the back" (Panofsky, 1962: 174-76). The function of overlapping forms in favour of both partial disclosure and covering-up is also recognised by Wolfflin when he abstracts one of the characteristics of Baroque art as *elusiveness*, which means the lack of definition to the object. The overlapping of objects once again becomes the most important device for

Wolfflin to depict Baroque "painterliness," by which the partial concealment of objects stimulates beholders to imagine and discover what is lying behind.

The artistic application of juxtaposition and overlapping of forms has had an incredible burst in modern times. Cubism indulges a spatial constitution of montage; while modern architecture prefers the pictorial effect of both surface flatness and congregated texture. Before that, the contradictory paintings of Cézanne start to introduce the intertwining of the world and the body with a non-hierarchical composition between parts which further galvanises the indefinition of space. Merleau-Ponty claims that the reason for Cézanne to do so is basically a worldly embodiment, taking the infinite conditions of human sensoriness into consideration. The theories and photographical experiments in visual culture, like the ones of László Moholy-Nagy and György Kepes, modern theorists on visual culture, give a reason for architectural historian Colin Rowe (1982: 40) to criticise Cubist space as a "simplification and intersection, plane as opposed to mass." However, just as Jacque Riviere reviewed in 1912 about Cubism, modern visual culture has already transformed parts of representation equally as the symbolic representatives of an object, acting as compositional forms to present a heterogeneous space. It is not the same as any other precedent representations, neither Egyptian nor classical art, by which objects are transformed into juxtaposition and overlapping forms, yet with a pure and homogenous meaning of space in nature.

Juxtaposition and overlapping are premature conditions for other advanced spatial configurations. To make a composition of three or more forms only makes a difference in the numerical level; it does not acquire any new visual technique. As this numerical conglomerate always happens in a static environment, this mechanism forbids, as previously disclosed, any change in locations of forms. Thus, there may be quite a different story if locations as such are constantly changed during the process of visual representation. Such a change proposes another principal manner of visual representation, which is the movement. Such kind of movement does not mean a correlating and dynamic visual relation between object and viewer, but only intends to point

out that it is possible to facilitate the effect of juxtaposition and overlapping to a more complicated organisation of forms. If one can represent bewildering forms in a way far beyond the capacity of observers to identify them as individual objects, movement as such is accomplished. In this way, the visual technique of movement becomes an appropriate manner to transform the original objects and forms into utterly different agents for spatial representation.

2.2.3 Movement for Visual Perception

The first application of movement can be sought in the classical Greek art. Panofsky (1955:62) observes the shifting of dimensions as one of the three major features of Greek art actually resulting from the organic movement of bodily forms. As already explained, Egyptian art fixes parts of the object by certain simplified formulation, and projects them onto an orthogonal grid, which is convenient for the making of sculpture and painting. Ancient Egyptians would not feel awkard to juxtapose parts of sculpture that are forged anywhere by different formulations, as long as these heterogeneous parts could perfectly imply their individual significances of object as a simple form. Greeks oppose this kind of inflexible constitution of object; because the naïve Egyptian superposition appears to them not suitable for an organic unity. They believe there should be a relatively similar guidance for all the parts within a single work of art. It requires a modification to each component. Based on the methods of naturalistic observation and anthropometry, Greeks rightly observe that the figure of an object will change its profile when the beholders move their viewing positions, as parts of the object being viewed involve a relative movement. Between the pairs of connecting parts there is an inherent relation of mathematics that is always operating. Either will dynamically influence the visual perception of the object. The former phenomenon as the profile-changing object is called "foreshortening." The other, the mathematical relation between parts, belongs to an idea of organic proportion as a common fraction. Both concepts are essential for the visual representation of object and distance, altogether with a third feature of "visual adjustment" which makes

representation more eurhythmic, contributing to the three major characteristics of Greek art.

The visual experience of movement for a potential beholder is firstly legitimised and rationalised by the individual contributions of Renaissance artists for their physiological experiment on the movement of form of the human body. Albrecht Dürer, as well as Italian art theorist Piero della Francesca, intends to reduce the irregular spatial profiles of the human body into a series of simple and planar forms. In so doing, the description of the dynamic movement of the human body will be available by means of a spatial schematisation of visual contours. Figures of High Renaissance show that, in their bodies, there exists an inherited central axis, around which the movement of parts like that of the head or shoulder could be visually balanced.[18] Furthermore, with the effect which Adolf von Hildebrand will identify as *Reliefanschauung*, a relief view for the figure, the surface of body parts has been carefully examined and adjusted to avoid the ugly angles, the simple intersections of vertical and horizontal lines, and the unattractive contours. It offers the beholder so harmonious a sense that the volume of the object appears visually "round." To a certain extent, it is meant to present the form of an object, not only based on its iconological nature, but also according to how it appears to the eyes; in other words, a demand that appearance of form should be compatible with a smooth sense of spatial depth in vision as well. Visual effect becomes a much more essential factor to judge the success of representing space.

In Mannerist figures, visual perception would be impossible if without the participation of the vision of the spectator. Benvenuto Cellini, an unchallenged master of this style, takes every chance to induce the beholder's eye within innumerable views. Each view only works as a slice of visual representation of the object; and it is thus incomplete. It compels the beholder to make a circle around the figure for a thorough understanding. Accordingly, it is very

[18] This characteristic of axial centrality has also been noticed in architectural theory by Robin Evans when describing the spatial configuration of multiplying and extending the number of dome centres in the church of Brunelleschi's Old Sacristy at San Lorenzo (1419-1428). See his book *Projective Cast* (Massachusetts: The MIT Press, 1995), p.14.

common to find a mannerist fountain free-standing right at the centre of a piazza, while a High Renaissance statue would be placed against a wall.

People will find Baroque art far more "lunatic" in the manner of representing forms of objects. At first glance, a Baroque image could be taken as a visual feast. The three-dimensional object is almost dissolved within the quantum waives of light and colour. Panofsky calls this effect "unlimited freedom," and Heinrich Wölfflin "painterly." It seems that there is no need to go for a circular perception as that of Mannerism. However, it is just the process of dissolving that reveals the even more complicated visual relation between a figure and others lying around. They fuse together, losing individual representational meanings, while forming a dynamic but coherent formation. For Wölfflin, this painterly style is based on an "illusion of movement."[19] It does not depend on but surpasses any definition of form; because the effacement in planes or even lines may suggest that any formal explanation to the represented figure is always inaccurate and insufficient. In such a visual system, it is not the form but the movement that indicates symbolic meaning of represented space.

To further disclose this feature, Wölfflin (1971:31) comments that such kind of movement is contained by light and shade, and "the contour is quite annihilated, and the continuous, static lines of the old style are replaced by an indistinct and gradually fading boundary area." The disappearance of boundaries thus triggers an illusion of a constant change. The visual images projecting or retreating in all directions render individual spatial occupation, and in so doing make the flatted surfaces rounded. The architectonic effervescency in the Baroque arrangement declares the end of the first stage from real object to form; what it proposes is a process whereby subjectivity begins to replace the object in representing space. As Panofsky claims (1955:106), "for [the styles from Baroque that could be grouped as pictorial

[19] Wölfflin, H., *Renaissance and Baroque* (Verlag: Benno Schwabe, 1971), p.30. In this essay, Wölfflin concludes three characteristics of the painterly style of Baroque: the composition of light and colour, the dissolution of the regular which leads to the "painterly disorder," and the elusiveness which means the lack of definition. The last two of the three are particularly important to the criticism of the existence of CP in the Chinese water-mountain style of scholar elite painting.

subjectivism], solid objects in general ... meant little in comparison with ... unlimited space."

2.2.4 Proportion versus Scale as Relative Size of Form

> Proportion is a correspondence among the measures of the members of an entire work, and of the whole to a certain part selected as standard. From this result the principles of symmetry. Without symmetry and proportion there can be no principles in the design of any temple; that is, if there is no precise relation between its members as in the case of those of a well shaped man.
>
> ——Vitruvius, *The Ten Books of Architecture*, trans. Morgan, M.H. (Dover Publications: 1960), p.72.

For modern scholar P.H. Scholfield (1958: 19), the translation of proportion from ancient thoughts is not as consistent as is normally believed. 'Symmetria', 'eurythmia', 'proportio' and 'commensus' are equally translated into English as 'proportion.' And 'commensus' is once regarded as 'scale' as well. Proportion is about how to build the whole from individuals. Alberti (1988: 156) called this process *concinnitas*, "that reasoned harmony of all the parts within a body, so that nothing can be added, taken away, or altered, but for the worse." Proportion has a comparatively mathematical basis and can be calculated and further delivered as a reliable treatise for the work of representational art. A well-established proportion between parts may claim a consistent spatial connection in-between; and it is consequently an appropriate method to define the form of distance. On the contrary, a mal-proportioned composition is sometimes capable of indicating spatial depth in the iconographical sense; but this depth is always discontinuous. Whether proportioned or not, this kind of composition shares the mathematical basis with another similar term - scale. Both correspond to the size(s) of object and thus could be manipulated according to numbers.

Scale, however, is not intended to examine parts of objective length. Literally, it indicates a visual characteristic of a *relative* size of object if comparing with any other correlating forms. As Charles Moore and Gerald Allen both agree in their co-written book *Dimensions: Space, Shape & Scale in Architecture*, scale is pertinent to the size(s) of other objects. In another words, as proportion

normally happens between forms of the same object, scale always means to make comparison with forms of other objects. Accordingly it declares two objects involved, as they are physically disconnected; which means there is always a distance in-between. In the sense of architectural design, scale thus attaches great importance on a subjective judgement of good or bad on the size(s) of object according to the human body. Le Corbusier's *The Modulor*, is an ideal exemplar to clarify the meaning of scale. [20] If without the identification of the discrepancies between the size of an architectural structure and the dimension of the human body (which for that structure turns out to be a different object in space), scale will make no sense at all in the field of architecture. Whether a scale is beautiful or not in the architectural sense entirely depends on how it fits in the requirement of convenience in usage; yet for visual culture of distance in pictorial space, it matters how the visual relation of objects appeals to the eye. This intention echoes what David Hume, Locke and Berkeley claim about the beauty of the relation between the part and the whole, which depends on the beholders' individual eye and their disposition. However, it is not too difficult to notice that both proportion and scale must function on a mathematical and geometrical basis of form. It is such a game of comparison between sizes of forms that contributes much to the establishment of spatial depth in visual images.

Proportion is at first a term of Greek art usually used to describe the interrelation between the actual dimensions of parts in a single embodied human figure. Based on the anthropometric observation on the human body, Greek artists insist that there be a mutual restriction between any connecting body parts, for example, the ratio of the upper arm to the forelimb. This discovery of organic proportion can be equally applied to all pictorial objects, including the human figure, architecture and space. Greeks favour whole-number ratios (Panofsky calls it *common fractions*) to determine the relative dimensions of figures. They expressed sizes of figures mutually, rather than

[20] Le Corbusier, *The Modulor*, trans. Peter de Francia and Anna Bostock (London: Faber & Faber, 1956). Beneath the veil of its numerical system, *The Modulor* has a subtitle as "a harmonious measure to the human scale universally applicable to architecture and mechanics." It underlies a physical relation between the human body and architectural space; that is to say, the regulation of the spatial dimensions in that system is reliant upon the sense of a real body, not a pure and abstract arithmetical calculation.

with a unanimous unit of dimension, for example, x=y/2, not x=1 y=2. This utility of proportion enhances the organic composition in Greek art, which is endowed with an overwhelming sense of reality. Greek architecture is thus able to be constructed firmly according to the proportioned sizes of parts of the human body.

What Vitruvius describes about proportion has long been doubtful, upon whether the Roman architect has achieved actual human proportion based on average measurements, or simply juxtaposed an ideal scheme of body to architecture. Richard Padovan (1999: 164) believes it should be the latter. As Scholfield (1958: 21) understands, Vitruvius takes human body as a vivid diagram that is applied to architectural design to express sizes of parts as submultiples to the size of the whole. It is thus a kind of unit fraction. Hellenistic composition is interrupted by mal-proportioned figures, as Panofsky (1997: 42) claims, the figures are "not to scale," while indicating distance artists are in need of help from form and colour of body. All these factors contribute to a primitive module system which permeates Byzantine representation for the human body. Panofsky identifies that the employment of this module is because of the influence from the east, a discovery in the algebraic system. In the icon painting of the head, it involves a measurement called the "three-circle scheme", to draw three concentric circles with a compass. The centre of the circle is located at the middle between the eyes; and the radius for each is multiples of the length of the nose. Accordingly, the whole composition of body parts is based on a module of nose- and face-length, independent of any organic proportion like that of Greeks [Figure 2-2].

And under certain circumstances, when painting a prominent human figure of symbolic meaning, Byzantine artists would suppress the scale that would be gradually diminished based on the natural law of vision. Instead, they make compensation with a greater value of scale in order to enlarge the figure in pictorial space. This treatment is because, in medieval thinking, an essential figure must be distributed with an "appropriate" scale that is compatible with its symbolic significance, not in accordance with where it stands in the picture. It is clear that in mediaeval art, scale, as it can transform the perception of

form, becomes a dominating feature in representing object and space. And such a feeling of appropriateness to symbolic meaning in form must be organised by both iconological knowledge of geometry and mathematics.

Figure 2-2 "Three-Circle Scheme" Halo of Byzantine Art (Panofsky, 1950)

This feature is expected to be found in Gothic architecture as well. Cesariano observes the surviving account of Gothic craftsmanship of Milan cathedral, and calls it the "rule of the German architects" [Mathes Roriczer (c.1435-95)]. In it, the designing of medieval churches should follow three steps, from the basis of equilateral triangles, equal bays, to the finally fixed size by means of *vesica piscis*. The use of a triangle as a geometrical means of setting out the plan leads to an extensive speculation on the possibility of applying the square roots of two (*ad quadratum* in Latin) and three (*ad triangulum*). Viollet-le-Duc further comments on this geometric pattern of architecture with three categories of triangle, "the right-angled isosceles triangle," "the familiar equilateral triangle," and another one which he calls "'Egyptian' triangle, an isosceles triangle with a height of $2^{2/1}$ parts compared to a base of 4 parts" (Scholfield, 1958: 90). In this way, the whole ground plan of a Gothic church is homologous with formations of triangles being distributed while each shares the sides with its neighbours (Panofsky, 1967: 46).

Renaissance glory of proportion belongs to Albrecht Dürer. He tries to integrate two theories already at hand. One is the classical submultiples modified by Leonardo da Vinci, later shared by Vasari and Gaurico; the other is an exactitude and empirical observation which Alberti called *Exempeda.* The latter approach includes the measurements of six *pedes* (feet), six *unceolae* (inches) and six hundred *minuta* (smallest units), as they make the measurement more delicate and easier to obtain. With them, Alberti goes back to anthropometry, just like the Greeks have done, to reassure the "organic articulation" in the natural structure of the human body, calculating the ratio of its height, width and depth. But to demonstrate the scale of architecture in the space, Alberti selects another famous device of the square-marked pavement which will be examined in the text of perspective. In the north, Dürer continues the laborious task of scaling the body by measurements that are definable to vision. In his opinion, strictly geometrical methods are able to settle any representations upon a scientific earth. As per building technology, Palladio becomes the first architect to imply spatial division with continuous sequences of proportion. This method is, to a certain extent, identical to Vitruvius's measurement in favour of a 'symmetry' of interconnected spaces. Later, the validity of the five characteristics of Baroque art, as Wolfflin examines (1915: 14-15) for the illusionary infinity, must be ironically dependent on the abandonment of proportion; to quote Padovan's (1999: 264) point of view, "the unprecedented scale of Baroque gardens and cities made possible the creation of dimensions that appeared literally measureless."

The progress in proportion and scale always relies on the question of how to illustrate sizes of the object, or we can say, the sizes of distance. Gombrich describes a visual phenomenon of 'size-distance relationship' that is believed to be perfectly mastered by both the ancient Greeks and the mediaeval Arabs. He proposes that this method is found by ancient sailors and hunters when they have to judge the distance of an object over the horizon according to its 'apparent size', and vice versa; besides, Gombrich also claims a reason to use size as a method to judge distance for which the ancients may lack any other clues to maintain the same purpose (Gombrich, 2002: 219).

However, is it really the size that dominates visual perception? Charles Moore and Gerald Allen both proclaim that, in the architectural perception of space, the perception of the sizes is not consistent; however, as it must be always compared to another size, the relationship of such comparison is unanimous and unchanged. In Gestalt psychological analysis, Gibson also finds that it is not the size that intrigues the perception of distance. The apparent sizes of objects always change under different circumstances; so it is unwise to use apparent size to judge spatial depth. The only visual feature that remains constant and reliable is scale, by which objects are attached at the point against the background. And it is because of this feature that the apparent sizes of objects appear to have a certain implicit connection with their visual distance.

To explore the mechanism of size perception, Gibson (1950: 180) finishes a large amount of psychological experiments of visual perception, and he believes such a system actually involves automatically a scale in terms of any unique size that has been already given in advance, by memory or habit for instance. It is in fact a mathematical calculation in the mental process of visual perception. Gibson also believes that such an implicit involvement of proportion and scale features a primitive condition of visual perception; and thus it is quite different from any other physical measurements like rulers. This mental scale is identical with the human body in judging the infinite and subjective space offered by perspective. In this process, the human body does provide another device for painters to avoid the arbitrariness in size judgement called "a natural measure, centre, and point of view" (Harries, 2001: 78). This measure is undoubtedly a basis of memory to scale the object and distance according to the human body. In other words, scale is also a purposive pattern of form of 'symbolic meaning'.

It is not difficult to find a progress in the first three 'pillars' of visual technique, form, juxtaposition/overlapping and movement, as they all keep the size of the object untouched. However, when using proportion/scale as a purposive pattern of form, one can see that forms begin to change their sizes according to a relative comparison in-between. Such comparison, if keeping the change in form consistent in a certain way, is capable of making a much

more sophisticated visual phenomenon that has never been foreseen. The remaining three pillars of visual representation are all of the consequence of such consistent comparison. Among them, the simplest technique can be observed by an ordinary experience to compare the appearances of a single object when placed in different distances. One will immediately notice that there is a change in appearance: when an object is located far away, its apparent size seems smaller. The visual phenomenon of being-smaller-in-size is called 'foreshortening' or 'diminution'; and this tiny discovery actually contributes to the beginning of the higher level of symbolic form in visual representation.

2.2.5 Foreshortening and Diminution

The feature of foreshortening can be seen in almost every category of art. Claudia Schaefer examines its existence in Mexican representational art. Terence Grieder (1964) describes how space and form is foreshortened on Maya painted pottery, and enough similar exemplars can be identified with both in ancient Egyptian and Chinese visual art as well. However, Gombrich discriminates against all other species of foreshortening which fail to develop the same as an improved and influential principle as that of Greek art; as a matter of fact, they are believed to have already been wiped out by a process of 'artistic selection'. As disclosed before, Panofsky's three prerequisites of Greek art are the organic bodily movement based on anthropometry, the correction of distorted proportion as a result of visual adjustment, and the last but most critical feature, the foreshortening - a way of seeing that is not of artistic creation but in accordance with actual conditions of vision.

Why does only Greek art discover systematic foreshortening while other kinds of art remain silent? Della Seta, art historian and pupil of Emanuel Loewy, provides a plausible answer that the birth of foreshortening is due to a conquest in Greek sculpture, for which the feature of being "in the round" becomes an indispensible factor of "corporeity". To fulfil this purpose, it is urgent to differentiate spatial depths systematically. (Strong, 1907) It might be a coincidence that Vasari chooses sculpture as well when he firstly defines

foreshortening in terms of how it regulates the visual procedure.[21] William M. Ivins Jr. also explores the primitive foreshortening in Greek art. He discovers that, due to the disconnected composition of space in Greek philosophy, the visual representation of parts of the human body could be taken as separate elements[22] and thus laid within the private space of their own. Thus, the feature of foreshortening in Greek art is not so consistent as it is supposed to be. Quite often, one part of the human body has little connection with others surrounding it.

The early application as such is rather mediocre in technique but incomparable in its significance. Taking the images of two human feet in a pottery work of Euthymides around 500 B.C. for example, it is the first time in art history to find such an exciting example which illustrates the human body in the way of foreshortening. The '*Campaigners*' depicts the figure of Hector, the great hero of Troy, with a detailed inscription below as "*Hector takes the armor from his parents Priam and Hecuba.*" The toes of Hector's left foot are presented by five tiny dots that are seen in frontal view, while his right foot is kept in a normal side view. Gombrich identifies this manner in *The Story of Art* as the greater and more overwhelming discovery that has been explored in art than ever before. This attitude is shared by della Seta. This method has been largely applied later and has become a unanimous standard for mediaeval art. To a certain extent, Panofsky would acknowledge all kinds of forms in Byzantine art as "foreshortened," although mediaeval intentions of space are not of optical means, but of an adjustment to dimensions of the body in an oblique and schematic way. For example, in a typical mediaeval frontal representation of face, the imagery construction requires an overarching scheme of planes according to a certain module and circle. The result is a not-so-elegant-and-correct effect of foreshortening: the head is always inclined to either side; its

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[21] See *Vasari on Technique* (New York: Dover Publications, 1960), pp.154-55. In the later text of this book, Vasari provides detailed explanation for the word foreshortening: "We call these foreshortenings '*al di sotto in su*' (in the 'up from below' style) ... The foreshortenings from beneath upwards (*di sotto in su*) are so named because the object represented is elevated and looked at by the eye raised upwards, and is not on the level line of the horizon." In this manner, one has to raise the head to get a full appreciation of the figure, starting from the soles of the feet, then lower parts, and finally the top.

[22] It is not as separate as Egyptian art intends to illustrate, because Greeks apply common fraction numbers to regulate the correlating lengths of body parts, in a way different from the overlapping grids in Egyptian art.

vertical dimensions remain while horizontal ones are altered schematically. Such a scheme brings a major impact to Villard de Honnecourt's Gothic construction, in which the length of the human shoulder that is farther from the viewing plane will be shortened arbitrarily as half of the length of the other one, which is closer. In other words, foreshortening that is achieved at this level is more or less a schematic juxtaposition of forms without the consistency in the change of size.

James Elkins in his book *The Poetics of Perspective* gives more specification for Renaissance development of foreshortening. According to his closer reading of Vasari's *Lives of the Artists*, Elkins tries to distinguish it against another typical way of seeing, *prospettiva*. Actually, there are several kinds of description in terms of foreshortening, like diminution (*diminuzione* in Renaissance writing) and *scorcio* (*scrota* or *scorce*). For Elkins (1994: 56-57), diminution is only made use of in the representation of figures, not of architectural space. Since it has no definite rule to follow, the diminution as such often suffers a feature of "inexact or unquantified recession."[23] Arnheim explores much specific meaning of foreshortening by differentiating it in three ways:

> ... (1) It may mean that the projection of the object is not orthogonal – that is, its visible part does not appear in its full extension but projectively contracted. In this sense, the front view of the human body would not be called foreshortened. (2) Even though the visible part of the object is given in its full extension, a picture could be called foreshortened when it does not provide a characteristic view of the whole. In this sense, the bird's-eye-view Mexican and the Greek horse would be foreshortened, but not in a truly perceptual and pictorial sense. It is only our knowledge of what the model object looks like that makes us consider these orthogonal views as deviations from a differently shaped object. The eye does not see it. (3) Geometrically, every projection

[23] The same content could also be found in his essay, 'Renaissance Perspectives' in *Journal of the History of Ideas*, Vol.53, No. 2 (Philadelphia: University of Pennsylvania Press, 1992), pp. 209-230.

> involves foreshortening, because all parts of the body that do not run parallel to the projection plane are changed in their proportions or disappear partly or completely (Arnheim, R., 1956: 77-78).

For Arnheim, the best way to define a foreshortened pattern is to figure out whether it has any deviated forms apart from its normal pattern. All the deviations are expected to deliver a sense of depth dimension. Those basic patterns with simpler shapes could be more difficult to be identified as foreshortened forms because their figures look comparatively flat and thus resist the visual perception of three dimensions. So it is not a primordial foreshortening that presupposes the sense of space, but the composition of overlapping and juxtaposition, like the feet of Hector. Foreshortening at this level is still inconsistent in terms of the relative scale of sizes.

It is foreshortening no more when such consistency in scale is achieved. Renaissance painters and architects discover this fact, as they find foreshortened images of architectural space comprise such an unquenchably realistic representation that it cheats the eyes successfully. The dilemma between real and fake, space and image of it, endows this new visual technique with an unforeseen symbolic meaning. As Panofsky claims, perspective, the effect of consistent foreshortening, finally has become 'a symbolic form', because of both the forms it is intended to represent and the theoretical construction of it in either a geometrical or theological way.

2.2.6 Perspective as a Symbolic Form

Perspective is in fact a particular kind of foreshortening. As a historian of architectural representation of perspective, Robin Evans once hinges these two terms in the combination as "perspective foreshortening", when he describes how the visual recession intensively relates to the spatial credibility of the paintings by Vasari and Zuccari in the Duomo of Florence (Evans, 1995: 22-23). The mixture of these terms somehow leaves harmful vestiges over later translation and understanding towards their different manners in visual representation.

It is true that perspective is always a case of foreshortening as long as the vanishing point(s) requires a gradual shrinking in the sizes of objects when they successively locate at growing distances away from the beholder. In this sense, perspective is a manipulation of geometry; that is why art historians like Hubert Damisch and William M. Ivins Jr. prefer to originate the study of perspective back to Euclidean geometry. In such geometry, two major features of it are foreshortening and the schema of homogeneity of three-dimensional space. It is also possible to extend the study to Baroque art which is full of anamorphic distortion of vision. However, in a narrower sense, the formal birth of perspective happens around pre-Renaissance periods.

The first definition for architectural perspective can be found in Vitruvius's *Ten Books on Architecture*. Vitruvius offers three remarkable categories for architectural representation: the first, *ichnographia*, is the representation of building in plan; the second, *orthographia*, relates to the elevation; and the third, *scenographia*, means to represent a three-dimensional building on a surface, as both sides and façade are shown simultaneously. The last term is interested with the manipulation of visual distortion in the optical sense, due to the fact that, when multiple sides are shown to embrace the integrity of architecture as a body, a certain level of figural deformation becomes not an option, but a prerequisite. A full revelation of this thinking in art has to wait till Giotto and Duccio infinitise the physical world and explain it with a perspectival space (Panofsky, 1967: 14-15). According to Manetti's biography, Filippo Brunelleschi is the first to establish the system of linear perspective to construct the gate of Battistero di San Giovanni in Florence around 1420. John White (1987: 123) discovers that Alberti, in the second book of his treatise *On Painting* summarises four characteristics of this artificial perspective as: (1) no distortion of straight lines; (2) no distortion and foreshortening of objects or distances parallel to the picture plane; (3) orthogonals converge to a vanishing point dependent on the observer's eye; and (4) the sizes of objects diminish in an exact proportion to their distance from the observer. A first full chapter for this newborn architectural technique is writtern by Sebastiano Serlio who spreads the light to France. There in 1505, Pelerin (known as Viator) at Toulin published his *De Artificiali*

Perspectiva. Not until around 1583 when *Due Regole della Prospetiva Pratica* was published, has there been any large-scale academic distribution of Alberti's *costruzione legittima.* Pelerin's distance-point[24] composition later appears in the theoretical teaching of perspective of Vignola, who then marks the origin of the Baroque.

There is a distinction between two "perspectives" that are often discussed mutually: *perspectiva artificialis* and *perspectiva naturalis.* For Panofsky, the former is designated to describe a mathematical method to construct perspective in favour of architectural design. Following this idea, Brunelleschi, Alberti, Piero della Francesca, Donatello and many other Renaissance artists try to use this technique to construct architecture and sculpture, actual objects and images in pictorial space. The latter species relates more to the mathematical explanation of sight. This aspiration yet has an intention of symbolism. It can date up to the middle ages when artists are concerned with the adjective *communis* (Panofsky, 1960: 139). With this "artificial" method, an object is able to be detached from a subject, and a subjective 'distance' is thus inserted between the eye and the world. One of the consequences is that the object is objected and the subject personalised, which makes perspective a symbolic form (Panofsky, 1968: 50). Such a symbolic form of space comes up with Cartesian philosophical speculation for which *costruzione legittima* gives a new genesis of the homogeneous representation which can extend into infinity. In infinity is located at the point of convergence for the system of parallel lines that Desargues creates. What discriminates the study of Desargues from that of Euclid is that space actually begins to be concerned not only with geometry but actual vision as well.[25] Perspective stops to be a means "to see through" when Galileo uses it to enhance a typical Baroque manipulation, by which the ontological representation of space is distorted by perspective. In other words, perspective since then has been no more a method to reveal the perceptual truth, but a

[24] It is explained by Prof. Alberto Perez-Gomez as "second observer." For him, Vignola's technique settles a second observer standing perpendicularly to the beholder, while at the equal distance from the central point. In doing so he may be granted with the possibility to rationalise the depth (Perez-Gomez, 1997: 32-33).

[25] For the study of the combination of mathematics and vision, see Michel Serres, *Le systeme de Leibniz et ses modeles mathemathiques* (Paris, 1968), p.693.

tricky visual game to appeal to the eyes. Such a new version of "*perspectiva artificialis*," while losing its ontological origin, would function as a predestined order and be concerned more, in Panofsky's point of view, with constructing any possible imagery surfaces, which ultimately deprives space of its symbolic form.

It is soon realised that Renaissance application of *Perspectiva Artificali* who is faithful to its nature could not meet the needs of a formal organisation that favours the pictorial observation from multiple viewpoints. It aims to enhance the effect of the whole, rather than to peer out from a tiny viewing "hole" as Brunelleschi does. In other words, perspective from then on becomes absolutely a method that is totally concerned with the potential of visual impression. Wolfflin thus aptly discovers that, although perspective is born during the Renaissance, it is the painterly Baroque art that re-discovers perspective to project spatial depth as being superfluously as it could be. Referring back to Wolfflin's five points of Baroque art, one can find that Wolfflin actually uses perspective in a quite self-constrained way to describe the visual features of Baroque painting, sculpture and architecture. This becomes more obvious in the second part as *From the Plan to Recession.* However, he does mention about how to organise a single artefact with as many various viewing pictures as possible. For Wolfflin, the more unidentified boundaries and edges that are involved, the more all-pervading is the movement and fervent vibration generated. All are independent of any particular viewpoint. When planes are withdrawn and unapparent, the observer is driven to follow a forward-and-backward impression of recession between object and space. The Baroque insists that observers should not be feeling comfortable and expecting a definite view; they should always engage with oblique angles, by which at least two slices of images are constantly juxtaposed against the eyes: a frontal image with another shown in perspective. To introduce separate vanishing points means to increase the changeable effect of Baroque representation. To fulfil this purpose, it has to have control over the composition of vanishing points. The multiple vanishing points and the effect of foreshortening become so overwhelming that a definite relationship between the beholder and the world is no more available.

Divinity in perspective from now on has been eliminated; on the contrary, the visual construction is established upon a systematic representation of geometric entities. It "fixes the observer's point of view in an unusual location and only from this geometric point is the distorted image magically 'revealed'" (Perez-Gomez, 1997: 138). When an imaginative standing point of the human eye has been totally autonomous from the outside world after this elimination of symbolism, perspective, like that of Baroque anamorphism, is no more a so-called 'visual technique'. Starting from the 17th century, the viewpoint has been experimented to be placed at an unexpectedly far location; and the visual distortion of the represented object is nothing of actual vision or symbolic idea.

Gombrich claims a representation of perspective is able to codify and make a reference to an actual object (Goodman, 1976: 10). However, one can only admit that perspective, if deprived of its symbolic form, is merely a resemblance, yet not a representation of object at all. It is quite an ironic story that the original intention of perspective in the Renaissance to organise symbolic forms of an object in realistic pictorial space has become an effective device for late Baroque to eliminate the three dimensions of form. During the 18th century, the abstraction of descriptive geometry has deprived artists of passion in perspective. It is true, especially after Desargues settles the 'visual' laws of descriptive geometry as an abstraction of methodology.

Above all, a perspectival representation has no real distance. It is only an "opaque" screen or window which intercepts the visual cone, as Leonardo believes, to make a visual assumption of volume and location in pictorial space. The validity of such an assumption is based on the effect of consistent foreshortening in forms which resembles the appearances in reality. The consistency lives in the manipulation of scale on two dimensions. Perspective actually keeps the same value for the two scales to transform the figure on a surface. If not, although there is still a clear effect of foreshortening, the pictorial space seems to be distorted and thus unlike the appearance of actual space. This transformation is a stage of visual technique between

foreshortening and perspective; it has two different scales in transforming the figure, and it shall be disclosed now.

2.2.7 Projection and Projective Geometry

To a certain extent, visual culture is about a perception of image through a procedure of projection. To see things in the world relies on how they can be cast as visual images into the eyes. For instance, perspective presupposes a series of imaginary visual lines that concentrate towards a single vanishing point. These visual lines are called *projectors*. In this sense, perspective itself is a kind of visual *projection*. There is a clear distinction between perspective and projection. As the projectors of perspective concentrate towards a vanishing point, the parallel visual lines encompass the contours of the distant objects when projecting them on certain plane(s). Following the formation of projectors, the contours of objects are foreshortened by an identical value of scale in both dimensions into infinity. On the contrary, scales for projection are various. In both systems, an intercepting "semi-transparent veil" is needed to be projected on. It works for Alberti as an open window to be penetrated through by vision; and it is right here where a surface of painting is located.

It is interesting that, although a first application of projection could be dated back to the paintings in Egyptian art, its thorough prosper has to wait until the appearance of architectonics from classical periods. Despite that, projection as a representational theory almost remains primitive and undeveloped before mediaeval times. The major outcome of projection before that in the architectonic sense is the mapping technique of Geography. It requires projecting the Earth's circumference onto a plane to identify both location and distance more accurately. The first map could be traced back to the geographical work of the great Alexandrian geographer Eratosthenes of Cyrene (c. 284-192 B.C.). Three-and-a-half centuries later, Ptolemy makes a major achievement when he creates the first formal mathematical map. In Ptolemy's cartographical work, the Earth has been projected as a curved trapezoid while concentrating meridians preserve its spherical character. Then, the observer is told to form the *oikumene*, an imaginative base of the visual zone, with its centre at the latitude of Syene (which is now called Aswan in

Egypt), which is locatee at 24 degrees north of the equator. At last, Ptolemy asks the observer to position the eyes at the plane of Syene and to make all latitudinal circles parallel. In this way, one can have a frontal image of the three-dimensional Earth. According to Samuel Y. Edgerton, Jr.'s survey (1975: 104), Ptolemy's attempt is the first ever-registered case with clear instructions on how to make a projective image from a single point of view. Admittedly, to a certain degree, Ptolemy's cartography in *Geographia* is not exclusively an artistic work, but more likely to be a favourite calculation of mathematics by scholars. But it does foresee the Albertian perspective in many aspects, taking the distance-point for example. So, after the unexpected re-discovery of the writings of Ptolemy from two Florentina merchants trading in the east, the interest in Ptolemy's atlas begins to flourish in the ecclesiastical organisations in Italy. All this happened during the second decade of the *Quattrocentro*, just before the rebirth of perspective.

The aforementioned *scenographia* in Vitruvius's writing is a possible successor after Ptolemy's study. But it literally only concerns the imagery effect of the picture plane; in truth, it demonstrates that Roman artists still lack the ability to comprehend the three-dimensional composition of the embodied space with the concernment of scale. Such inability further results in that they could not make representation of architecture a pack of two-dimensional projective drawings, elevation, plan and section separated and juxtaposed as we do today.

It is still not clear whether mediaeval builders who follow Euclidean geometry have ever acknowledged the function of projection in their construction of cathedrals. But obviously some Renaissance architects specialising in stereotomy[26] of building structures have already realised this projective utility. When De l'Orme, an appointed royal architect for Henri II at Fontainebleau, discovered that the technique was applicable to designing the trompes of any form after his journey from Rome in 1536, what he bears in mind is a simple idea of successive orthogonal projections to obtain the exactitude lengths and angles of the voussoirs [Figure 2-3]. However, his geometrical understanding

[26] Stereotomy is a kind of art that concerns how to cut solids (i.e. architectural structures) in order to make them fit together perfectly and tightly.

still rests in the Euclidean system and emulates Vitruvius's methodology, as demonstrated in his writing *Premier Livre de l'Architecture*.[27] Another major progression in Renaissance stereotomy could be found in *Libro de Trazas*, the only recently published writing of the Spanish architect Alonso de Vandelvira, who introduces the High Renaissance style to Andalusia and the districts around. This text is in fact a guide for construction, as Vandelvira includes more details of the technique of stereotomy. For Sergio Luis Sanabria, the method that both de l'Orme and Vandelvira discover conflicts with the orthodox design theory of the Renaissance. For in such a manner, an object could be represented as "neither classical nor Gothic," but with a projective interest with pure form, which turns out to be more technical mapping without symbolic ideas.

Few texts of the Renaissance relate to projection. According to Samuel Y. Edgerton's observation, Alberti once emulates Ptolemy's projective technique to render a map for the whole of the city of Rome, and explains the details in a brief treatise called *Descriptio urbis Romae*. Both Leonardo and Durer facilitate this technique later in their individual experiments of shadow casting.[28] Michelangelo is truly an exception; however he does not advocate but clearly rejects making images of object by means of projection on surface, for he believes that the essence of sculpture and architecture lives in motion. So it is quite ordinary for contemporary viewers to find that Michelangelo's embodied work is deeply rooted in a non-perspectival manner, which is distinguishable from the ones of other contemporary artists.

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[27] More description of this treatise could be found in William M. Ivins, Jr., 'Philibert de l'Orme's Premier Tome de l'architecture' in *The Metropolitan Museum of Art Bulletin*, Vol. 24, No. 5, 1929, pp.148-151. Detailed explanation of how to build the *trompe* can also be associated with Robin Evans's *Projective Cast* (Massachusetts: MIT Press, 1995), pp.185 - 189.

[28] Thomas Da Costa Kaufmann has examined in detail the topic of shadow projection in his essay 'The Perspective of Shadows: The History of the Theory of Shadow Projection' in *Journal of the Warburg and Courtauld Institutes*, Vol. 38 (1975), pp. 258-287.

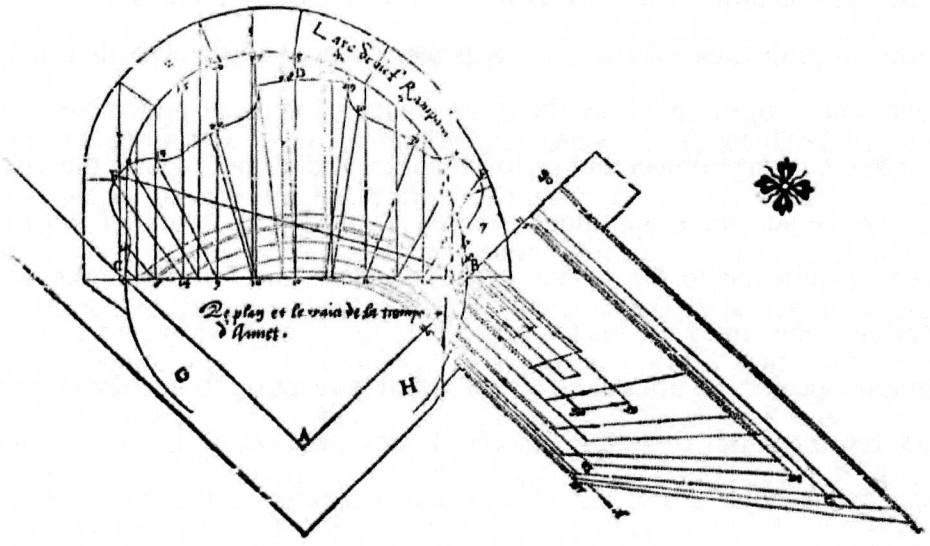

Figure 2-3 First of seven diagrams for the traict of the trompe at the Chateau of Anet. (Philibert de l'Orme, Premier Livre de l'Architecture, IV, 3, 92r.)

Before the 17th century A.D., there had been still no serious concern to theorise projection; and a systematic application of it in either painting or architectural demonstration was rarely seen. This situation does not change until Desargues, with whom the modern theorems of projective geometry are usually credited. Projection since then has got rid of symbolic significance and become a knowledge of projective geometry. The final embodiment of projection as a pure scientific method was established by Gaspard Monge by the end of the 18th century. While projective geometry means to render the external reality neutrally, architecture has been reduced and transferred into homogeneous projections with only formal information. This attitude can be equally shared by Durand, the first who openly teaches descriptive geometry in terms of architectural design at the Ecole Polytechnique. Alberto Perez-Gomez observes that the later mindless inclination to reduce the fresh body of architecture into a game of geometric projection has instigated the modern crisis of architecture. In his opinion, the form of architecture and the representation of it should always be part of a symbolic plan of divinity. Any vision of architecture without symbolic meaning is of no significance to present the nature of space.

Projective geometry has many variations; but for visual art there are two major categories of projection ever used to organise pictorial space. The first names 'Orthographic Projection'. It is the most frequent of these projective styles ever used to envisage object and pictorial space. It does not require the visual lines to converge, but keeps them parallel. Typically, the parallel lines are always perpendicular to the picture plane, and thus the foreshortening scale that follows the lines is unchanged. It is the very reason that makes orthographic projection not unlike actual visual perception. It becomes a more abstract representational system. Robin Evans believes it is quite a long tradition that scholar s are, intended or not, suppressing the importance of orthographic projection in contrast with the craziness that they have imposed to the study of perspective. In fact, orthographic projection has an incomparably long history. Orthographic projection, which is better to represent an isolated object, becomes incontrollable for the representation of an extending space. That is why many theorists, although acknowledging it as a primordial status of perspective, suppose it ironically as an impasse for the pictorial representation (Evans, 1989: 24). According to this, orthographic projection becomes only a useful device to French geometers who focus only on the depiction of a single object of mechanism.

In order to show the side-view of an object to render the three-dimensionality, oblique projection has been used: Diderot has discovered and documented in his *Encyclopedie* about another method of projection known as 'Oblique Projection' in order to represent an object that is bent at 45 degrees oblique to its frontal face. In so doing, the orthogonals have certain fixed values in the proportions of different dimensions. Two more sub-modes of oblique projection are called axonometric projection and isometric projection. The differences of these styles rest on their individual bending angles. William Farish, a mechanical engineer and mathematician at Cambridge, firstly wrote a text in 1822 about a more regulated model of isometric projection; this is the first time this method of visual representation was called the name of 'isometrical.' The theory is based on the projection of an object onto three orthographic planes which are distributed equally at an angle of 120 degrees,

centred at the intersection of projectors. In this system, the projected dimension on any of the planes will have a same value in scale.

Representations in a way of projective geometry are expected to keep the sizes of a series of represented forms changing consistently in one or two dimensions, but never so for all the three. And what is more important to discriminate it from perspective is that such consistency in one dimension has no correlation with that of others. This phenomenon is quite different from what we perceive with ordinary vision. In most of the time, forms of an object appear to be distorted after this transformation and can never fulfil a realistic representation. Under these circumstances, it is only the oblique projection that has been applied in the represention of pictorial space, in which images of figures are distributed along the oblique axis against the projected plane of the painting. As long as it is intended to resemble the actual visual impression to a certain degree, projective geometry will still be an appropriate visual technique to represent the purposive pattern of object and space.

All the seven 'pillars' of visual representation of distance have thus been disclosed according to their different mechanisms and significances as the purposive patterns of form. The comparative study addressed in this thesis is intended to use these visual techniques to examine the progress of representation of spatial depth in Chinese visual art. As already explained, particular visual schemes greatly yield to a cultural context for the specific representation; however, at the level of pictorial form and visual technique, they all rely on the identical basis of how a real object or distance is transformed into reliable forms, and how these forms are further organised by special visual techniques to be appropriate purposive patterns, which are of symbolic meaning to represent spatial depth in the pictorial space. The story of visual techniques in western art is now concluded; however, for the expedition in ancient Chinese visual art of space, it has only just begun.

Summary

The first level of Panofsky's iconological study is to transform the real object into pertinent forms in visual perception. After that, forms have to be organized by means of particular visual techniques, and thus become series of purposive patterns which are able to indicate specific visual scheme.

Spatial depth in visual representation is a kind of visual scheme which depends on both the available forms in pictorial space and the relative visual techniques. To acquire the capable forms, one must be able to differentiate the representation of two dimensions and the three-dimensional object to be represented. In term of visual culture and psychology, to perceive space in pictorial art requires this ability in order to notice a further visual mechanism which may make compensation to the loss of the additional dimension: spatial depth. Visual technique, which organizes forms in special way, is thus the artistic choice to make such compensation which has been always an uttermost challenge for ancient artists of both east and west to conquer.

The transformation of visual forms and the application of certain visual technique in visual art always follow identical rules. These rules are kept unchanged even though sometimes different cultural backgrounds may influence the understanding toward how a pictorial art may indicate its visual scheme. Fortunately, cultural and ideological issues take no charge in the first two levels of visual transformation and representation. The fact that form and visual technique are still intact gives a chance for this study to continue a comparative study on the availability of both of them in western art. It is intended to discover and re-define the manners and significances for the application of each visual technique throughout the history of western visual art.

There are seven pillars of visual techniques that are examined for this purpose. All of them are of great importance to the first two levels of visual representation. Besides the original stage of form itself, juxtaposition and movement deal with two or more forms simultaneously. Scale and proportion have special function in changing the relative sizes of forms, and thus they are

indispensible to the other three techniques: foreshortening, perspective and projection. The relative size of object in visual impression is able to change according to where the object locates away from the imaginative eyes of observers. A comparison between two apparent sizes of the objects when locating in different distances contributes a sense of scale in relative size; and accordingly, a supposed distance between them can be identified with in the visual representation. Based on this thinking, the effect of foreshortening only shows the change in relative size; for perspective, the scale for such a change is consistent in value in three dimensions; while projection/projective geometry may have different scales, and this leads to a distorted image of object which seems not so realistic.

It is believed that in ancient Chinese visual art, all these visual techniques are also fundamental to represent spatial depth, individually or in certain combination. To justify the hypothesis of Cavalier Perspective in terms of the creation of spatial depth, one must go back to the available pieces of pictorial art, and to find out whether these seven pillars have contributed the pictorial space in that representation. Both architecture and landscape comprise the main area for such visual representation of space. So to sum up, pictorial space as such have to be originated back to the first two stages of iconological study where artistic creation is no more "artistic", but only a series of attempts to integrate visual techniques, in order to transform represented objects into forms of purposive patterns.

Chapter 3 Spatial Indicators: Construction of Architecture in the Early Stage of Chinese Visual Representation

What is Chinese visual representation of spatial depth supposed to be? Available studies on this oriental visual culture of C-P always associate with perspective in the western point of view; and such bias could be traced back to the earlier scholarship in the beginning of the 20th century, including Benjamin March's essay *A Note on Perspective in Chinese Painting* (1929), Wilfrid H. Wells' *Perspective in Early Chinese Painting* (1935), and Ludwig Bachhofer's paper on Chinese visual tradition (1923). Among them, the second document once searched answers in a tradition up to the roll paintings of Ku Kai-chih (顾恺之, roughly 4th A.D.) to speculate visual depth of perspective. Since then, a methodology of comparative examination on both eastern and western traditions became prevailing in later documents. The overview of western visual culture in Chapter 2 is somehow based on a similar point of view, yet for a different purpose; instead of delivering a clear comparative definition of Cavalier Perspective, it seeks a possibility out of the range of perspective in the whole visual culture. Thus, by specifying each of the western visual evidences, the functionality of Chinese visual representation of spatial depth could be examined as a conceptual package of visual techniques on the formal level.

In the next two chapters, a book of Chinese visual tradition will open from pre-historical to early modern times. It means to elaborate only certain exemplars, rather than a full range of introduction in order to identify with which technique(s) and relevant representational meaning the ancient artists may have already facilitated and projected into particular forms in works of art. Based on the diversity of visual styles and schemes, the survey of pictorial spatial depth is generally divided into two parts, one for each chapter: the transition of realistic architectural representation from that of primitive art to

the ruled architectural drawing of the Sung Dynasty, and the development of spatial depth in landscape painting, which lasts longer till the period of the late Ming. In so doing, the continuous progress in Chinese visual representation of spatial depth is available for later chapters of visual study. The findings of these two chapters intend to contribute as part of the theoretical mechanism of representing spatial depth, and it aims to identify C-P either as a particular visual technique or a specific visual "event" and "scheme". The answer to it forms the main body of Chapters 5 and 6.

3.1 The Medium of Chinese Early Visual Representation

It is obvious that the visual representations are crafted with different purposes throughout history. The reinterpretation of Chinese visual tradition differs according to how one can understand the procedure of seeing a representation. Consequently, one can expect to find explanations of visualising and perceiving the representation in Chinese traditional texts.

Some of these are rather self-contradictory. In Chinese, three characters are significant for this purpose, '*guan*' (观), '*du*' (读) and '*kan*' (看), all literally meaning "to see." For the type of representation itself, it has further diverged between '*xiang*' (相), '*xing*' (形), '*tu*' (图) and '*hua*' (画). They overlap some characteristics of 'painting' or 'image' but none of the hieroglyph traditions could be exactly identified in English. For example, Figure 3-1 shows a rather frequent image as a symbol in Chinese ancient visual art. It is supposed to have the original image of the Chinese character *mao* 卯, as shown by Figure 3-2. Bulling (1952: 68) suggests that the triangular formation of lines in the image of *mao* actually derive from the ancient depiction of mountains that stand by either the river or road (which seem to be the double vertical line in between). If there is an additional horizontal line covering the top of *mao*, it then indicates another character, ang 昂, which has ever indicated a "horizontal barrier." [Figure 3-3] Both signs of *mao* and *ang* further symbolise gates; the only difference in between is that *mao* functions as a "spring sign"

for an open gate, and *ang* as the autumnal sign for a closed gate, thus presenting architectural senses with "a horizontal bar. "

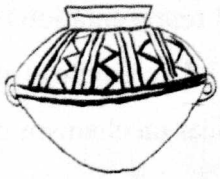

Figure 3-1 An ancient pottery, with decoration of triangular formation of lines (Bulling, 1952)

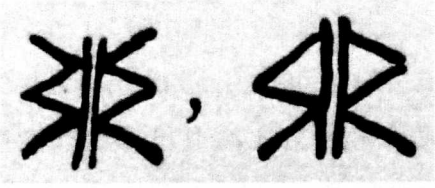

Figure 3-2 Image of ancient Chinese character mao, 卯

Figure 3-3 Image of ancient Chinese character ang 昂 (Bulling, 1952, Fig. 50)

The image of *mao* and *ang* is just one example for the integration of the four types of representation. Both the words now stand for a particular constructional element in Chinese wooden architecture. But what is more important is that the origin of their signifying images (or diagram, form, appearance) has already indicated a consistent spatial sense that derives from the ancient visual perception of the natural environment. To describe an actual object, ancient people transform its spatial occupation into the two-dimensional character. It is thus reasonable to believe that these "simplified" signifiers, in their formal appearances, should intrinsically connect with a sense of spatial depth. Needless to say, the original application of Chinese visual representation must also present a similar connection. The study of this thesis on Chinese visual culture wishes to specify possible connections between visual image and the spatial depth signified in it.

3.1.1 Several Types of Representation in Name of Painting

The four types of Chinese visual representation disclose that meanings of a representative image can be different according to various circumstances. Admittedly, the clear differentiation between the four types is never easy to

achieve, because their functions are extremely sophisticated and diversified according to philosophical and customary understanding through long history.

'*Painting*' is normally understood as a way of 'representation'; and it can be seen through both occidental and oriental art. The word '*xiang*' (相), on the contrary, is a particular word, indicating a distinct form of 'representation' in Chinese visual culture. Willard J. Peterson (1982:112) explores it as a 'figure,' which, as Craig Clunas believes, is supposed to be more appropriate when he quotes part of Peterson's reinterpretation of *The Book of Change* 易经 that "Providing figures is a matter of resembling ..." In the same text, Peterson (1982: 80-1) makes a distinction between '*xiang*' and another widely reinstated term '*xing*' (形), which literally means 'form.' '*Xiang*' for him not only stands for a faithful image but also "a form or shape, a design or configuration or pattern, and a written symbol." In *The Book of Change*, '*xiang*' stands for a transitional phase in which the *great ultimate* (太极, *t'ai-chi*) produces *two forms* 两仪 and further divides into *four emblems* (four '*xiang*'), and subdivides as *eight trigrams* 八卦. Michael Sullivan (1962: 4) in a similar manner believes that '*xiang*' has an abstract function to give visible and appropriate form to all phenomena, as long as they are called an *object* 物 with a physical form, and in the meantime it delivers not the individual object but integrates nature by each represented thing in the light of the thinking that truth "exists eternally beyond the limits of temporal existence and is manifest in natural forms." In this point of view, '*xiang*' ensures the pre-existence of "*thing*" that could not be regarded as a concrete object. It is actually beyond the sphere of visual image. If taken as a form or pattern, '*xiang*' acts only as a visible symbol or emblem of certain visual phenomena, rather than as a representation of them. '*Xing*', by contrast, can be understood as the forms of the objects which are normally *tangible* and subject to human physical senses.[29] While both '*xiang*' and '*xing*' are perceivable in the representation, it is the former which concludes the expression of the lateral meaning. Later in Ming Dynasty, '*painting*' has been extensively translated as one of the six

[29] Thus '*xing*', which has a similar translation as *form* in the modern sense, appears to fit in a certain extent the modern philosophical understanding of the representational form that intrigues the visual perception of object.

forms of the script, under the name of combination, 'figures of forms' ('*xiang xing*', 相形).

Apart from all possible explanations above, '*xiang*' can also be treated equally for religious paintings as a special term, '*bian*' (变, literally meaning 'to transform'). For example, many of the frescos in the Dunhuang 敦煌 Caves dedicated to Buddhism can be called '*bian xiang*', '*jing bian*' (经变, sutra transformation), or just '*bian*' of certain Buddhist gods (see Figures 4-7 and 4-8 for example). However, it is only these religious representation that can be called '*bian*' or '*bian xiang*'.

Although it is rather customary to call the representation '*tu*' 图 in a similar sense of '*hua*' (画, painting), '*tu*' is found to be more comprehensive. Craig Clunas identifies '*tu*' as "map, picture, diagram, or portrait." It is thus reluctant to take '*tu*' as any form of representation in the visual sense. When taken as a verb, '*tu*' has more mental meanings like 'to anticipate, scheme and plot,' etc. However, according to his study of ancient representation, Clunas (1997: 104-107) would rather call this kind of '*tu*' a "*chart*", which seems more appropriate than any other replacements. The history of the conceptualized '*tu*' has been linked by Ming intellectuals back to '*he tu*' 河图, an ancient representation translated as '*River Diagram/Chart*' and believed to be carried out of water by a mysterious beast according to classical texts. Many documents support '*he tu*' as the original usage of '*tu*', among which *The Book of Change* turns out to be the first. Meanwhile, '*hua,' as the simplest of the four,* can be defined only as 'border', or 'to circumscribe' in the book *shuo wen jie zi* (说文解字, 1st A.D.).

The relationship between the four types of *form* and *representation* is also disclosed by ancient manuscripts on painting. Wang Wei 王微 of the Sung Dynasty always describes that painting is actually the *change* and *form* itself (与易象同体).[30] Chang Yen-yuan 张彦远, in his *Li-tai ming-hua-chi* 历代名

[30] "Painting is not to represent. It is actually the change and form. 以图画非止艺行，诚当与易象同体." Wang Wei, 'The Discourse on Painting' in Wang

画记, documents that a 'painted design' has three original roles. It says: "first to serve as pictograms [*tu-li*] for *pa kua* (divination), second, to promote the knowledge of characters [*tu-shih*]; third, to serve as pictorial representations [*tu-xing*]."[31] When formulating a well-defined theory for painting, Jing Hao 荆浩 expresses that an honourable painter should be "capable of dividing the *emblem* [*xiang*], or archetypes, of objects and grasping their truth 画者, 画也, 度物象而取其真."[32]

It is thus obvious that different types of representation matter variously. To appreciate such diversity, Chinese ancient artists and scholar elites have a particular system of visual manner. Each visual manner parallels to a particular kind of representation. Consequently, before disclosing examples of Chinese representational art, it is necessary to explore the three methods to perceive different Chinese visual representations.

3.1.2 The Methods to Perceive Chinese Representation

Methods to look into representations are much more various according to their visual meanings. It is thus equally critical to manage the way of seeing as to the configuration of the representation itself. With so many different types of media for traditional Chinese representation, how to define an appropriate manner to perceive?

As the simplest appearance of seeing, '*Kan hua* 看画', literally to look at the painting, is far beyond a physiological matter for traditional Chinese beholders

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Bomin and Ren Daobin eds., *Hua xue ji cheng: Six Dynasties and Yuan* (Shi Jiazhuang: Hebei Mei Shu Chu Ban She, 2002), p.15.

[31] ibid., 95.
"颜光禄云：图载之意有三：一曰图理，卦家是也；二曰图识，字学是也；三曰图形，绘画是也." The English translation is quoted from Osvald Siren, *The Chinese on the Art of Painting* (Mineola: Dover Publication, 2005), p.225. Wen C. Fong translates *tu-li* as "represent[ing] nature's principles," tu-shih "representing concepts," *tu-xing* "representing nature's forms." Wen C. Fong, *Images of the Mind* (Princeton: The Art Museum of Princeton University, 1984), p.2. In the same book, Wen Fong believes painters of the Sung Dynasty seek formal likeness in aim of representation of inner reality, even when they criticize the capture of the mere appearance of an object which unbalances the distinction between "constant *xing* (form)" 常形 and "constant *li* (principles)" 常理.

[32] Ibid., 191. *Bi Fa Ji* 笔法记. For English translation, see Wen C. Fong's *Along the Riverbank: Chinese Paintings from the C. C. Wang Family Collection* (New York: The Metropolitan Museum of Art, 1999), p.21.

of painting. A scholar-elite viewer could normally perceive more connotations than does an uneducated person. According to their various enhancements, the procedure of viewing can be divided as '*du*' 读, '*guan*' 观, and '*shang*' (赏, connoisseurship).

It is ordinary to '*du hua*' (读画, 'read a picture') rather than '*kan hua*' (看画, as 'seeing it') for Chinese ancient representation. The former requires treating image as text. Emerging literary study recently favours this methodology to translate vision as a procedure of motion and duration. It is not the legibility of image but the movement of the eyes which dominates visibility and coherence of representation. The character '*du*' echoes the presence of motion and duration in visualisation if people scan the surface of image and overview its symbolic meaning. '*Guan*', by contrast, implies fixed viewpoints from where the observer meditates and penetrates image. It is accordingly always translated as a 'visual gaze'. '*Guan*' appears rather subject since it supplants contemplation of representation with religious and spiritual ideas, fusing into its course a dual visualisation and contemplation. So '*guan*' is a typical manner of viewing for Buddhist '*jing bian*'. A later religious self-consciousness of mind implies viewing representation with introspection towards the subject of *self*. It gains more popularity since the Ming Dynasty as a rebirth of Daoism and Buddhism. '*Shang*', as connoisseurship introduces more aesthetic protocols other than direct visualisation. It requires beholders to perform elegant rituals and sincerely contemplate artefacts with deep knowledge of tradition and antiquity. One can thus spiritually communicate with the ancient, and by judging good styles from bad one can enjoy an ultimate happiness through learning from them.

3.1.3 The Diverted Significance of Representation in Later Periods

Self-consciousness of introspective mind leads to a diversion in the evaluation of Chinese visual representation. Later dissemination of introspective visualisation changes the face of it and brings forward a doubt that whether Chinese visual art, especially paintings since the Yuan Dynasty, is

representational. This question is critical and may jeopardize the establishment of C-P by erasing its formal basis of physical architectural senses.

Common critiques embrace the idea that Chinese painting from the late Ming Dynasty has gradually transformed beyond representation, leaving behind only self-referential expression. This manner allows image to signify both itself and its precedents and lose representational meanings. This point of view overwhelms studies of Chinese art, like that of Wen C. Fong in *Beyond Representation.* Apart from that one can hardly neglect the unwillingness in ancient painting manuscripts to imitate the real world with faithful representation. They may highly appreciate aesthetic purposes and subordinate 'likeness in form' instead. Other studies like Norman Bryson's understanding on Chinese visual tradition proclaim that what really matters is the particular manner of representing rather than the object represented. In Bryson's point of view, this relationship is inherited between subject and matter; and it contributes to speculation on later Scholar-elite paintings which are full of subjective expression. However, truth never fails to explain major themes of early-stage representations in favour of realistic depictions and secular scenes in daily lives of ancient people. To the religious ceremony neither could it speak for Buddhist dedication of spiritual pictures.

The less the subject overarches, the more suitable it makes a representation available for the examination solemnly as an iconographical space with ontological significance of visual depth. Representation of architecture should in pattern intrinsically deliver ontological senses of spatial depth; however, patterns must subject to purposive intentions by which architecture plays its distinctive role. However illusive patterns and intentions it has, C-P should speak itself with affirmative examples.

This chapter starts a journey through exemplars of Chinese early stage of visual art to seek in images of architecture certain degrees of iconographical rather than spiritual sense of spatial depth. It targets visual representation of architecture; and spares landscape for the next chapter as alternative visual medium. Fragmentary existence of C-P is supplemented by visual evidences and descriptions throughout areas of ancient drawing, engraving, painted stone

or brick, mural painting, as well as later painting manuscripts and architectural treatises. The following study is about to explore both theoretical and practical intentions by which C-P manages spatial depth in particular ways.

3.2 Visual Spatial Representation of Architecture in the Early-stage Chinese Art

This visual journey may be hampered due to several negative facts. The first impasse may be the difficulty to choose a proper manner for this exploration of C-P in Chinese representational art. Chronological narration appears ineffective due to the possibility that identical representation may intermittently happen. On the other hand, quite frequently certain visual technique may suffer weird degeneration during later periods. Meanwhile, categories of different visual schemes are hardly manageable if simply chronologically oriented; because similar schemes may cover a considerably long period and thus overlap each other, which means a repetition to circulate certain topics. However, no matter how complicated visual art appears to deny further exploration, it is a rather convincible truth that visual technique should always be compatible with a particular visual medium. When new visual media develop, advanced techniques will follow and be applied to representation. Thus, a diagram of Chinese representational art of spatial depth is at our disposal if only division of pictorial space associates its birth, visual scheme, and visual medium altogether.

History of visual medium is a neglected but pertinent topic for visual culture. Ancient people have great reputation for their competence of hand making like stone carvings and metal engravings. A large amount of visual representation of space can be found on painted stones or bricks of primitive art, enahnced later with more equipment such as pigments. When building technique gradually upgrades, flattened wall comes to perfect representation in the light of mural paintings and frescos. After the East Han Dynasty (25-220 A.D.), the affordance of paper both in quality and price greatly contributed its replacement to former media and let the capacity of representation evolve at so

high a level that visualisation of space finally goes beyond representation itself, especially during the Ming and Qing Dynasties.

Mindless chronological narration or coarse enumeration of visual schemes should be avoided; yet, on the contrary, with the help of the history of visual medium, exploration of C-P in Chinese early visual representation of architecture could basically be understood in this way as three major aspects: the pre-Tang representation of secular space on engraving, carving and painted stone; the religious representation in Buddhist caves of Tang and afterwards; and the ruled architectural drawings of the Sung Dynasty.

3.2.1 Visual Representation of Secular Space in Pre-Tang Dynasty

Two-dimensional image usually represents three-dimensional objects of human figures and architecture in Chinese primitive art. It largely exists on surfaces of antique potteries and engravings and becomes quite a routine whereby artists paint human faces with profiles, while a rough circle stands for surrounding space. In one example of *Cang Yuan* rock painting in Wu Shichi's *Chinese Primitive Art* [Figure 3-4], a village is represented by an oval border with several primitive buildings erected centripetally. Human figures who are working in the field are distributed randomly within this restricted space. The whole configuration of this rock art is similar with the image of ancient Egyptian water pool [see Figure 2-1], although in a contrary direction: centripetal vs. centrifugal. The basic and direct idea of this painting is to present a 'real' sense of existence of everything in the village. It may also indicate a perfect formation of the village with houses nearby marked out by roundabout layout, while farm land allocated at the spared centre. Actual distance disappears since no correlating scale between structures of human body and buildings exists. However, illustrated buildings have different visual patterns: those painted with white and black caps, and even the number of their pillars, could tell a suggestive story about intentional orientation of space. Being centripetal and projected to any direction off the village, the image means no difference between front and back orientation, which indicates a primitive sense of space but lack of realism as that of a map.

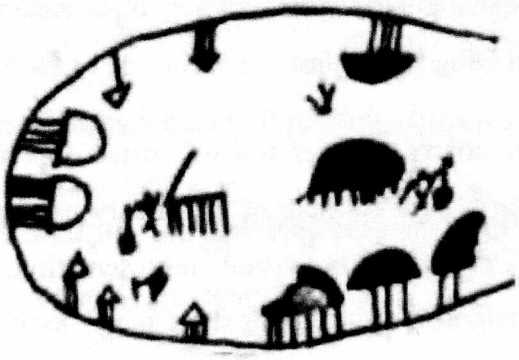

Figure 3-4 The Image of a Village in Cang Yuan Rock art, by Wu Shichi, 1996

See two more examples of engravings on bronze potteries of War Times (roughly 5th to 2nd B.C.) for the spatial representations of the same kind. Both are full of images of palaces, human figures and items laid within. On the first pottery [Figure 3-5], a façade of a two-storey palace is presented by its profile image. Not coincidentally, images of human figures, a desk and bottles are all represented under the roof as frontal projection. However, a second engraving [Figure 3-6] chooses an interesting image of section to illustrate architecture and the half-empty jars on the table.

Figure 3-5 Engravings on Bronze Potteries of War Times, based on Hayashi Minao's copy

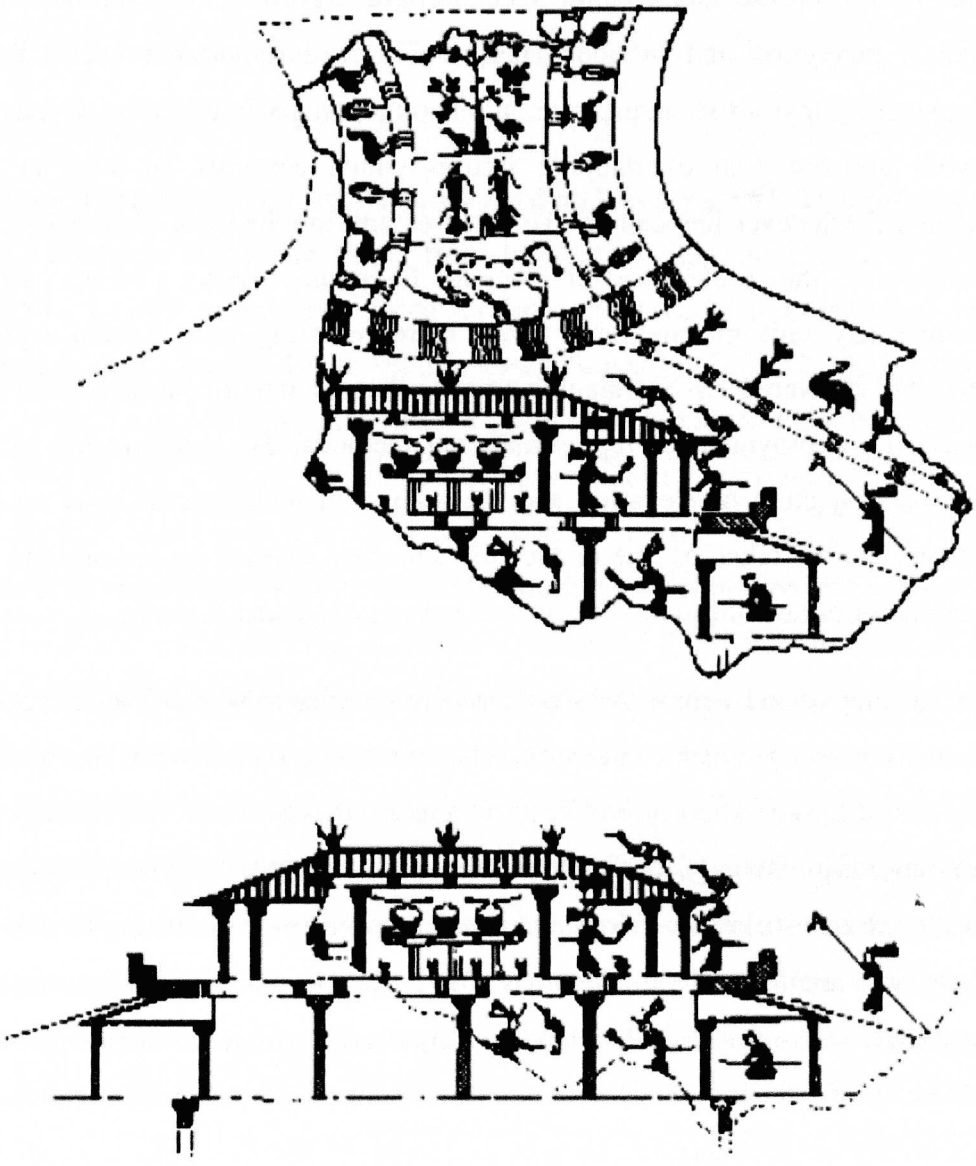

Figure 3-6 Engravings on Changzhi Bronze Flint of War Times (Fu Xinian, 1998: 91)

According to his archaeological report, Fu Xinian 傅熹年 (1998: 90-92) believes that artists of that time might intend to represent hollow objects by sectional images, while keeping solids in their frontal projections. A further reasonable deduction may disclose a possibility that architecture, normally a hollow object,[33] should be represented as a section of structure. Consequently,

[33] The theoretical understanding of space in Chinese architectural history is widely regarded with an origin in the ancient religious belief. Arthur Waley once gave a reliable translation of the old saying of Taoism: "We put thirty spokes together and call it a wheel; but it is on the space where there is nothing that usefulness of the wheel depends. We turn clay to make a vessel; but it is on the space where there is nothing that the usefulness of the vessel depends. We piece doors and windows to make a house; and it is on these spaces where there is nothing

the overall representation of the second engraving concludes simultaneity of frontal projection and section. This is of special importance especially if considering that artists manage an all-encompassing illustration of scene and avoid deficiency in overlapping figures which conceals, or we can say 'deletes,' whatever lies behind. To some extent, this betrayal to actual vision echoes as the preference of ancient Egyptians, when Chinese artists deliberately omit information in favour of representing more. Spatial depth is thus not delivered by overlapping images, but by intentional selections and particular deployment of representational methods. The combination of the frontal projection of elevation and the section of architectural body on this pottery can be taken as one of the first and most explicit to demonstrate the manner of organizing spatial depth as a purposive pattern in image.

For a long period before the Han Dynasty (starting roughly from 2nd B.C.), utensils excavated from ancient tombs exemplify only human and animal figures. Representation of architectural space remains low in both quality and amount. Han Dynasty marks the emergence of tomb and mural painting. Although it is still a mysterious and unsolved problem that whether the sudden burst of architectural images has hidden connection with its frequent application in tombs. Utilisation of architectural structures and decorative elements of painted stones or bricks should contribute to the emergence and prosperity of architectural images in tombs of the Han. As a prominent presence for ancestors with a fundamental intention to dedicate faithfully depicted living place to them, tombs seem unsatisfied with a simple repetition of frontal projection. More sophisticated techniques are to be involved, and it thus becomes quite ordinary to facilitate two or more visual methods within one spatial representation. By implying different visual manners according to spatial senses, figures in an image no longer separate from each other. All architecture has compatible features; surrounding space shows collective

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that the usefulness of the house depends. Therefore just as we take advantage of what is, we should recognize the usefulness of what is not. 三十辐共一毂, 当其无, 有车之用. 埏埴以为器, 当其无, 有器之用. 凿户牖以为室, 当其无, 有室之用. 故有之以为利, 无之以为用" See his translation of *Tao Te Ching, the Way and Its Power* (London: George Allen & Unwin Ltd, 1965), p.155. Architecture in Chinese tradition only makes sense when it is hollow to have the capacity of accommodating things inside.

relation to physical bodies. Thus landscape formerly isolated now strives to integrate in some way and offer more grandeur effects to hold more scenes with an identical visual scheme.

In visual representations of the Han, Alexander C. Soper (1941: 155) observes an accumulative feature in mass, from isolated to associated ones. It is a primitive device to indicate space, co-born with early representation of landscape (see Chapter 4). In another essay Soper (1941: 167) claims that most of the Han paintings in the form of tomb slabs were "strung along a base line without any concern for environment, or enclosed conventionally in an architectural frame drawn in elevation." But persuasive images of the Han confirm the existence of many visual techniques like overlapping, axonometric projection and foreshortening as primitive forms of C-P. They make spatial representation far more vivacious than ever before; and even later exemplars show more splendid details and variations from them, these paradigm techniques keep unchanged in nature for the following thousand years. A modern defination of C-P, if it does exist, never challenges these foundations seriously. The reason for it may be part of the undevelopment of both social and economical environment as well as the degradation of the scientific thinking. however, we are still obliged to know how ancient artists discover the primitive form of C-P on a fragamentary ground of visual techniques.

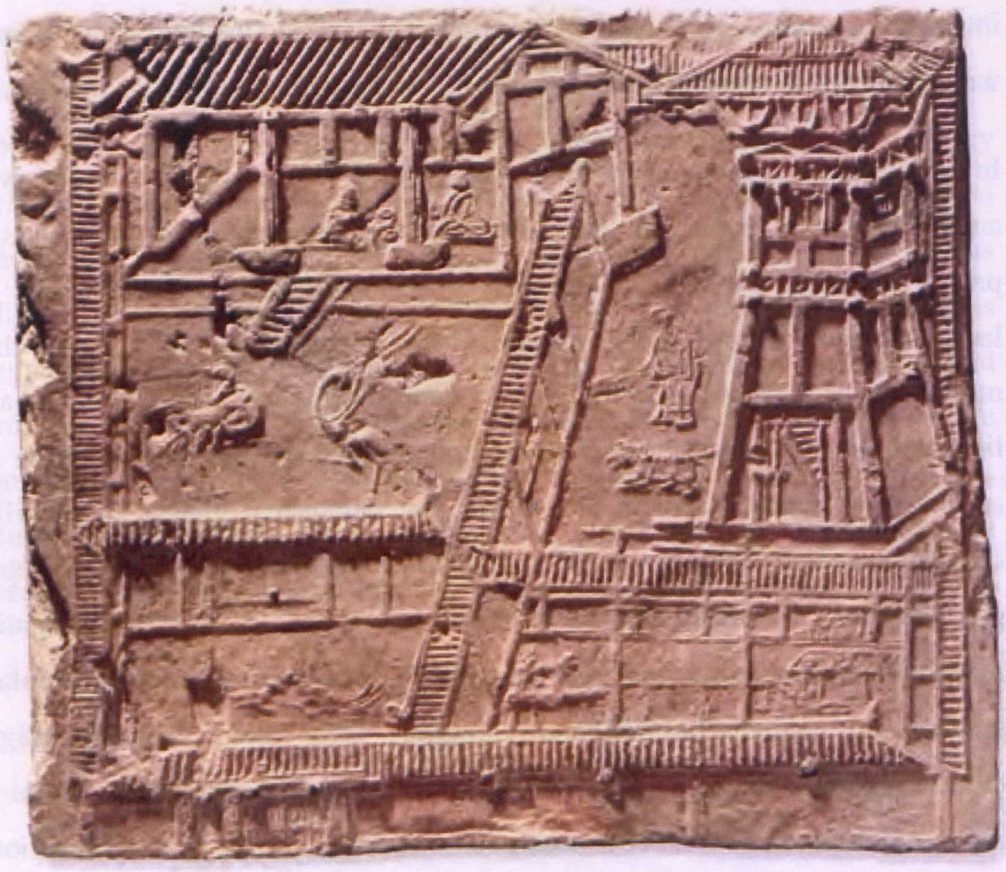

Figure 3-7 Architectural Images on a Painted Stone from Chengdu, Han Dynasty

On a painted stone [Figure 3-7] excavated in Chengdu, Sichuan Province, the architectural image sophistically segments and transits images of structures by selected techniques. Courtyard is painted as surrounded by roof-covered corridors. In either half part of the courtyard locates realistic representation of architectural structures. Their flanks are of clear oblique projection; front images of architecture show their side-view to enhance the sense of spatial depth. Ludwig Bachhofer highlights this combination of two different views as an archaic breaking-through of "*three-quarter view*."[34] The side-view of the left-hand building even suggests concentrating visual lines, intentionally foreshortened or not. Should the corridors not betray visual integrity, this

[34] "*Three-quarter View*" is a typical term that Bachhofer borrows from Panofsky's iconographic analysis on Medieval Art. Panofsky uses the compositional term "Riß-reihung" to demonstrate the mode of "combination"; it does not mean any spatial slant or slope, but depicts only an inclination to juxtapose two faces of object. This idea is explored in detail in Lillian Lan-Ying Tseng's essay 'Traditional Chinese Painting through the Modern European Eye: The Case of Ludwig Bachhofer' in *Tradition and Modernity: Comparative Perspectives* (Beijing: Peking University Press, 2007), pp. 508-533.

configuration as a whole would have sufficiently reminded us of oblique projection. Meanwhile, the mapping of images seems following a brand new principle that structures far away would be placed on the top while those nearer would be at the bottom. This principle is generalised by Wilfrid H. Wells (1935: 14) as a common attempt to render spatial depth in both ancient occidental and oriental art. However, Wells would not accept it as of same imagined plane as perspective. He provides an alternative answer that ancient artists prefer two-dimensional object and surroundings to imitate in the appearance of reality of three dimensions. Orientation in this stone image confirms more sophisticated than that of former ancient engraving of village; because beholders should stand at an objective and neutral point, rather than at a centripetal point in the village. In the latter situation, space relies on substantial bodily experience which disfavours ontological measurement of spatial depth.

If comparing it with the layout of pillars in *Cang Yuan* rock painting, the visual feature of outer-rim corridors at the left, right and back sides appears identical as circled and centripetal. Slight change happens at the front side where the wall and main gateway are of frontal projection, similar to bronze potteries of War Times. Unfortunately, the representational manner of corridors is not compatible with internal buildings. The outer corridor extends basically following a square route which, if equally applied to interior buildings, should project obliquely as well. However, connections between the left-side corridor and the house appear rather odd. A same defection exists where the central corridor meets the side of the house. An urge for harmony between the enclosure of the right-side tower and the central corridor is unsatisfied by its extension out from the front courtyard; since it suddenly bumps into the foreshortened left side of the house. Spatial relations between house, tower and corridor are not of an accurate layout, as juxtaposition of oblique projections introduces only unclear orientation. Despite of all these visual errors and a belated compromise, the painted stone shows an honourable attempt to integrate parts with the identical oblique projection.

Painted stones and bricks are the first media of representation of architecture. As building technology improves from the Han Dynasty, large-scale images of architecture and cities come onto flattened wall. A correlating requirement is to find more techniques to organize countless architecture in a single image. Obviously it is insufficient to draw a city-scale circle as trustful plan as long as bodily experience of village can't be simply applied to endless grids of streets and buildings. To certain extent, this uncompromised need to encompass space may be the hidden factor to compel the beginning of C-P as truly a *cavalier* technique. A great number of wall paintings are believed to have been crafted from the Han to Song Dynasty (960-1279 A.D.), yet few have survived. Recent excavations in form of mural painting are able to show that spatial representation of the late Han demonstrates skilful frontal and oblique projection to formulate larger-scale space of towns and cities.

Among them is a famous mural painting, *City of Ningcheng* of the Holinger Tomb [Figure 3-8], in Inner Mongolia of China. *Ningcheng* depicts a surrounding town walls of square formation by simplified profile style. The main courtyard on the left is visually controlled by a unified oblique projection. Errors are efficiently avoided in spatial relations of structures within this courtyard. But abrupt convergence between the corridor and the left-side city wall still exemplifies the absence of integral concern about environment as Alexander C. Soper identifies. The city wall functions only as a rigid frame to accommodate rather than to interact with all representations inside. Picturesque courtyards flourish with accurate details of a festival celebration. Courtyards naturally distribute surrounding human figures, dissected by interior enclosure. Spatial depth is accomplished by the extension of corridors of oblique projection. That "those allocated in the distance shall be arranged on the top" becomes an unchallenged rule.

Meanwhile, other auxiliary buildings outside the main scene confirm frontal projection. Since oblique projection to show sides of architecture has already at disposal in earlier art like painted stones, the frontal projection of these small isolated buildings at the back seems to be a deliberate treatment, for their comparably unessential significance demands less concern (it is much

more obvious in the case of the right-side building, which appears to be grand enough in volume but still painted with a front view). Such a treatment may derive from hierarchy in visualisation: the more essential the constituent is, the more attention it gains, and the more complicated visual methods it associates.

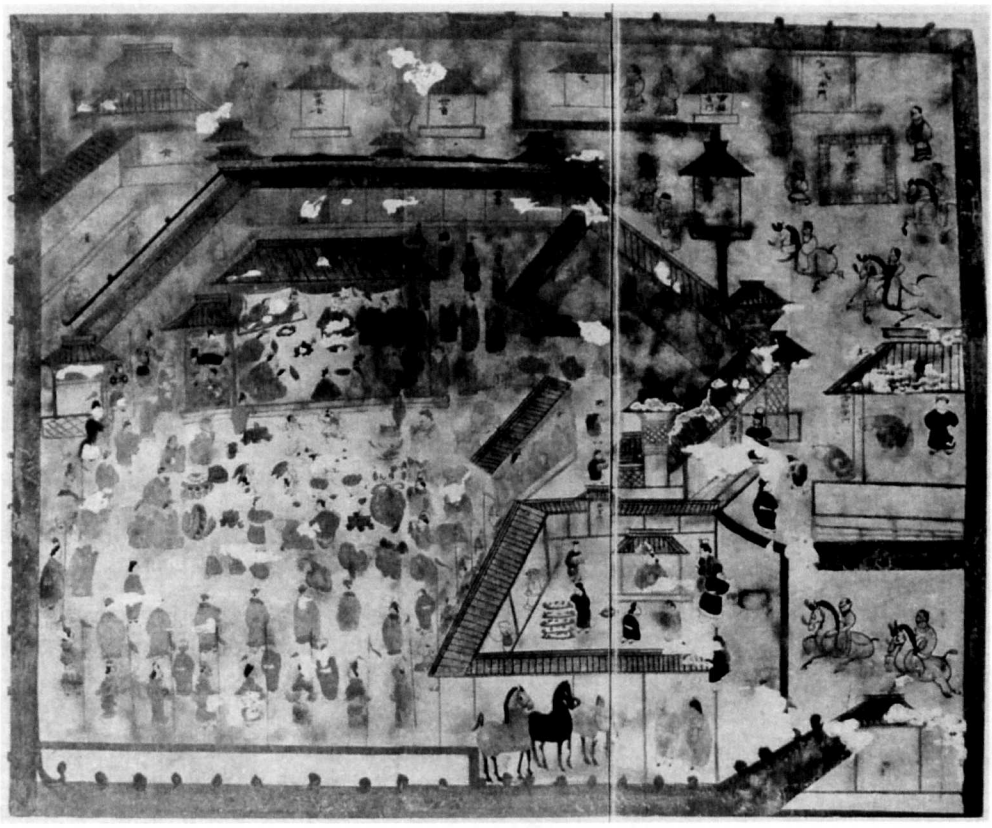

Figure 3-8 City of Ningcheng, Holinger Mural Painting in the Tomb, 2nd A.D. 和林格尔汉墓宁成图. (Photo: Photo Archive, Department of Art and Archaeology, Princeton University)

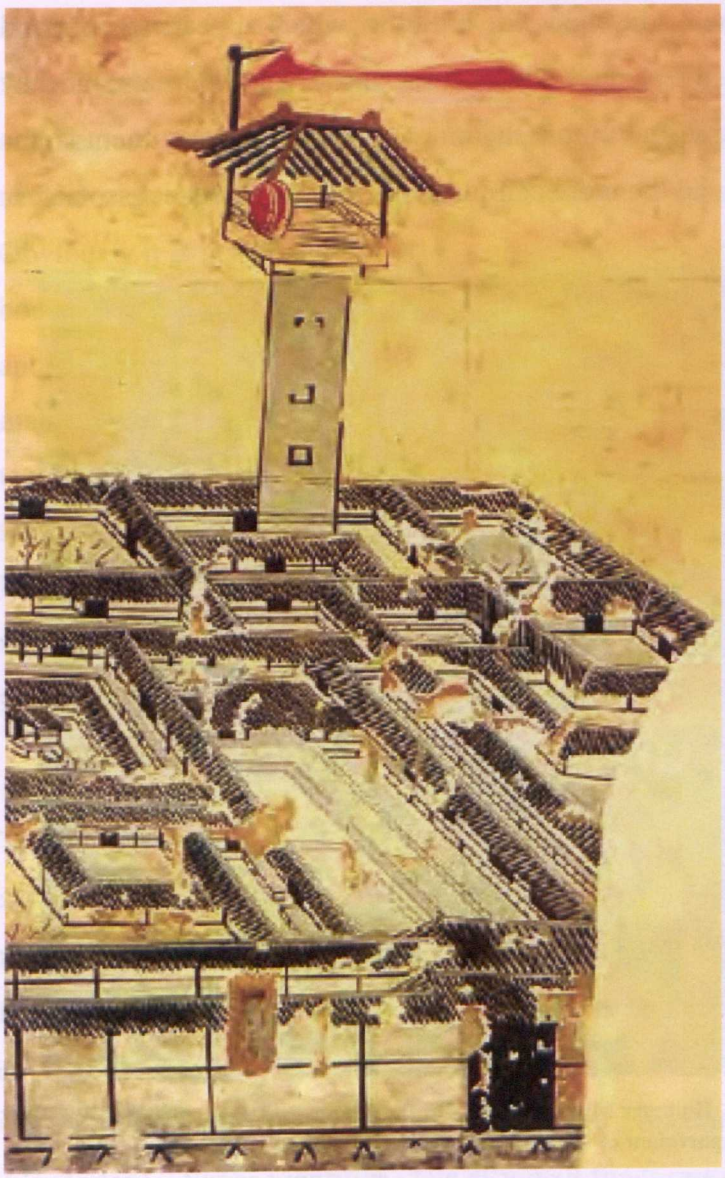

Figure 3-9 Recovery of An Ping Mural Painting of East Han Dynasty. 安平东汉墓壁画

The *An Ping* mural painting of East Han Dynasty (25-220 A.D.) [Figure 3-9] is roughly of the same period. Representational technique for the townscape dramatically improves in it. No longer is outer rim of the town a symbolic circle; and connections between corridors in the corners of courtyards are perfectly illustrated by axonometric projection. Spacing of pillars on the ground floor harmonize in scale with the height of handrails and gates in the corridor. The only visual "mistake" exists at the front side where its over-exaggerated double- floor height contrasts other interior walls of single floor. No explicit symbolic ideas suffices this over-exaggeration, and the answer may lie in the nature of external walls since during that time outer town walls

have highly defensive functions. It echoes the painted tower building, named as '*wang lou*' (望楼, the watching tower), which has a marvellous roof in an unexpectedly large scale. Although connecting lower ground by a stair shaft, the tower is obviously incompatible in its bigness with the rest of the architecture. Interestingly also, the shaft is painted with only a frontal projection, which makes the shaft superimpose axonometrically projected roofs all around. Superposition of parts of different levels of scale may also suggest a deliberate hierarchical order in charge of the subordination in spatial depth of structures as a whole.

Accumulation of small is the primitive device to indicate space by formulating landscape in between. Space of landscape functions as decorative background and develops so highly a complimentary control that it begins to dominate the whole configuration. C-P never concentrates only on bodies of architecture; neither does it fail to provide landscape to encompass the bodies. The coarse principle of such encompassment doesn't forbid C-P to represent landscape in which Renaissance painters always felt incomprehensible, but give it a manageable plasticity to interpret pictorial space with flourish of details and realistic atmosphere. George Rowley generalizes spatial representation of the Han with features as "*plasticity, foreshortening, ground-planes, geometric perspective, far distance and interpenetration of elements in depth.*"[35] It is not a sound explanation to the integration of architecture and landscape, as landscape can't be geometrically articulated. To the large extent, landscape of this period has to wait for its dynasty and before then it still remains as supplementary to architecture. Another pre-Tang example, *Three-chambered Tomb* in Manchuria [Figure 3-10] shows a city wall childishly drawn in the zigzag formation. "The vertical plane of the wall is distinguished from the horizontal ... [as] an elementary modelling [on both sides]" (Soper, 1948: 178). Deployment of three tower pavilions along the wall indicates an uncertified foreshortening by their gradual diminution in size. However, Alexander C. Soper believes in it an established visual practice for relative distance and dimensions.

[35] This point of view can be found in George Rowley's report published in Princeton Bicentennial Conference in 1947 titled "Far Eastern Culture and Society".

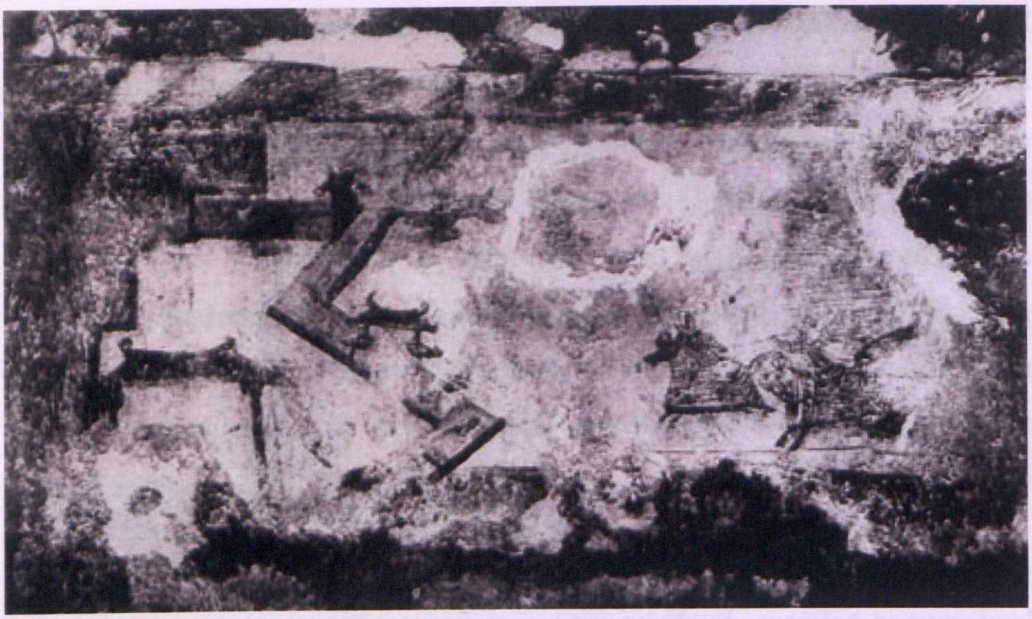

Figure 3-10 Manchuria, T'ung-kou: Three-chambered Tomb (dated "around A.D. 500" by Alexander Soper)

Figure 3-11 Detail of Landscape, from Mural Painting in the Tomb of Yi De Prince

Another mural painting of the Tang may interpret those features more explicitly. In part of *Yi de Prince* (dated around 700 A.D.) [Figure 3-11], elegant details of landscape and decoration of watching towers suggest the beholder's station point be neither on the ground nor from a bird's-eye view high above. From the indicated position, structures are presented as if at an ordinary angle of a one-storey building. Side-views of top structures follow a typical foreshortening style. However, it seems still incompatible with that of others. The visual fact that closer towers conceal rear structures in a sequence demonstrates the existence of overlapping mechanism and thus successfully

indicates spatial depth. As Rowley says, interpretation of spatial depth during this period still depends on elements, not integrity.

Intentions of realistic representation of architecture drive discoveries of single-point foreshortening. The geometrical thinking of such phenomenon will be disclosed in Chapter 6, which further explains various mechanisms of station-point and their particular contribution. Most of the visual features of C-P in the stage of single-point foreshortening parallel the western pre-perspective art, and this phenomenon induces Chinese scholar to take it as a primitive form of perspective. However, such relation proves inaccurate to describe behaviours of visual perception in foreshortening and perspective. Distinctive features have to be suspended until Chapter 5 to disclose possible mindless mixture.

Anyway, C-P of single-point foreshortening as a newly discovered visual technique has not been fully appreciated in architectural paintings until East Han (25-220 A.D.). Chinese scholar Xiao Mo 萧默 believes that architectural renderings in Dunhuang since the Tang Dynasty rely on this "pseudo-perspective;" and this technique becomes mature enough later to push forward C-P of two-point foreshortening, which configurations pictures of intentional verticality and eye levels lifted up pr pressed down. Such visual representation partly relates to religious thinking which strives to provide life-like sceneries for the doings of Buddhist gods. In this sense, although with highly subjective schemes, pictorial space urges for realistic representation on the contrary.

3.2.2 The Religious Representation in Buddhist Caves of Tang Dynasty and Afterwards

From the Han to the Tang Dynasties, a gradual transition exists in the visual media: from engravings and stones to mural paintings and frescos. As Buddhism spreads into China around the early Han, an additional religious scheme contributes to Chinese visual culture; Buddhism thus becomes a widely accepted scheme for visualisation in the form of fresco. The heritage of this tradition is so profound and lasting that it turns out to formulate the main stream of studies upon visual representation of this period. It has also an intensive influence upon Chinese religious art in many aspects, such as form,

content and function. Meanwhile, a large number of ancient manuscripts have documented the prevalence of religious paintings and frescos. Though many disappear without trace, some of them do survive, particularly in the caves of Dunhuang, where the medieval communication of commerce and culture flourished temporarily in this ancient town along the *Silk Road* for hundreds of years.

Buddhist representation distinguishes itself from secular images due to the identification of both religious belief and philosophical thinking. The meaning of visual representation in this sense could not simply be taken as any realistic depiction of ordinary life. Quite often, the abstract ideas it bears, and also the characteristics of symbolism, can both be identified not only by the special spatial configuration in fresco, but also from the particular designation in the name of such visual representation: *jing bian*, literally as "the transforming sutra;" in which spatial depth is expected to intentionally transform as well.

3.2.2.1 The Transforming Figure

The transforming figure, *bian xiang*, has two definitions. The first literally means to transform forms of figure; the other is understood in a way that "transforming means movement. With the stable image, the movements of paradise or hell can be presented."[36] It prevails in all kinds of Buddhist art from 5th to 12th A.D., including sculpture, engraving and painting, and influences even non-Buddhist art work in the early period. However, *bian* is believed to be only available in religious paintings and frescos from the Tang Dynasty, largely complemented by painting manuscripts like Zhang Yanyuan's 张彦远 *Famous Paintings through History* 历代名画记, as well as Zhu Jingxuan's 朱景玄 *Tangchao Minghua Lu* 唐朝名画录. *Bian* is a complicated transformation of C-P within two dimensions in spatial depth. It

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[36] Chinese religious definition of *bian xiang* is quoted as "对于所谓圆轮具足之曼荼罗而谓诸尊极乐地狱等之曼荼罗。有二义：一、变动也。画极乐或地狱种种动相，故曰变相。二、转变其形相。写此之义也。又转变本质为画图相也." Text is available at the online version of *A Dictionary of Chinese Buddhist Terms*: http://www.suttaworld.org/dictionary/input2.htm. This document has been translated by William Edward Soothill and Lewis Hodous in *A Dictionary of Chinese Buddhist Terms: With Sanskrit and English Equivalents and a Sanskrit-Pali Index*, Second Edition (Delhi: Motilal Banarsidass, 2000).

does not mean to be a single figure, but rather a congregation of images of Buddhist gods and even those believers who are performing ritual ceremonies with them.[37]

Consequently, as Wu Hung (2005: 352) claims, the research on Buddhist painting presupposes a basic rule: representation of any single image like figure or sculpture has a function, associating its religious rituals and architectural structures; and contemplation of a transforming figure cannot be isolated from particular sequences of religious ceremony by which the whole configuration is controlled. Exploration of spatial depth of C-P of this kind is thus also expected to obey these two principles.

3.2.2.2 Spatial Representation of Pre-Tang Buddhism Frescos

Although mature application of single-point foreshortening only begins in Tang Buddhist frescos, primordial examples are still worthy to detect and deliver a sense of continuity in the development of spatial depth, best examples of which are the religious representations in Dunhuang.

Figure 3-12 Prince Promenading Four Gates, in No. 275 Cave. 太子出游四门 (Xiao Mo, 2003: 257)

[37] Wu, H., *Art in Its Ritual Context: Essays on Ancient Chinese art*, 礼仪中的美术 (Shanghai: SDX Joint Publishing, 2005), p.351.

Here is a fresco *Prince Promenading Four Gates* in Cave No. 275, dating up to early 5th A.D. [Figure 3-12] In this fresco, architectural decoration of roofs and supporting structures are accurately painted in the profile style. It is also noticeable that a seemingly perspective-based pavilion appears in the background of representation.[38] According to Xiao Mo, it demonstrates a breakthrough in aim of illustrating three-dimensional objects without the help of axonometric projection. However, incapacity to control over the foreshortening of lines results in awkward distortions of the visual angle, and thus damages the integrity of architectural scale. However, Xiao Mo believes this "unsuccessful" representation discloses a tenacious visual experiment, due to emerging dissatisfaction towards axonometric projection. This technique is unsuitable when in pursuit of more realistic representation of space for Buddhist gods. The same situation exists in *Cause of Five Hundred Bandits* in No. 285 Cave of around 550 A.D. [Figure 3-13]. Although foreshortening of roof lines for the left-side temple is accurate enough, the upper roof of the two-storey gate at the right side is rather anti-convergent when extending to the back. In aim of spatial depth, a concern of architectural representation with environment is still isolated and occasional to claim its authority.

Figure 3-13 Causes of Five Hundred Bandits, in No. 285 Cave. 五百强盗因缘 (Xiao Mo, 2003: 258)

[38] Xiao, M., *Research on Architecture of Dunhuang* 敦煌建筑研究 (Beijing: China Machine Press, 2003), p.257. Xiao Mo adds a footnote on Page 256 that the word 'perspective' used in this document could not be considered the same as western scientific perspective which is based on mathematical construction. The Chinese counterpart has only basic competence for the spatial depiction with its general intention of foreshortening.

Early religious frescos also have explicit attempt in representing large-scale space. Typical representational "mistakes" for Chinese scholars is explained to be the result of an artistic reluctance to emphasise spatial logic in architecture, and of, on the contrary a preferred poetic concept over figures and events depicted.

This point of view is rather relaxing but somehow over-evaluates ancient practices of religious representation. One of the most featuring examples as such is *Cause of Sumati Lady* in Cave No. 257, dating up to North Wei (386 to 557 A.D.) [Figure 3-14]. This fresco fluctuates with contradictory visual features and three of them are marked with No. 1, 2 and 3. The sequence of numbers reflects the degree of complexity; so it is better to examine the third "error" first. With careful observation, one can sense defections in the "pseudo-perspectival" representation of the central pagoda. If taking the roof fringes of this multi-level structure as with a view of looking upwards, the decorative handrails of No. 3 by the side appear uncomfortable. Possibility is that artists of that time fail to harmonize foreshortening effect for all visual lines; yet juxtaposition of converging lines is not an appropriate replacement for such incompetence as well. There are two underlining intentions: that to follow traditional paradigms to place images far beyond on the top, and that to represent structures according to bodily experience which has a "station point" on the ground [Figure 3-15].

Figure 3-14 Cause of Sumati Lady in No. 257 Cave, 须摩提女因缘故事 (Xiao Mo, 2003: 258)

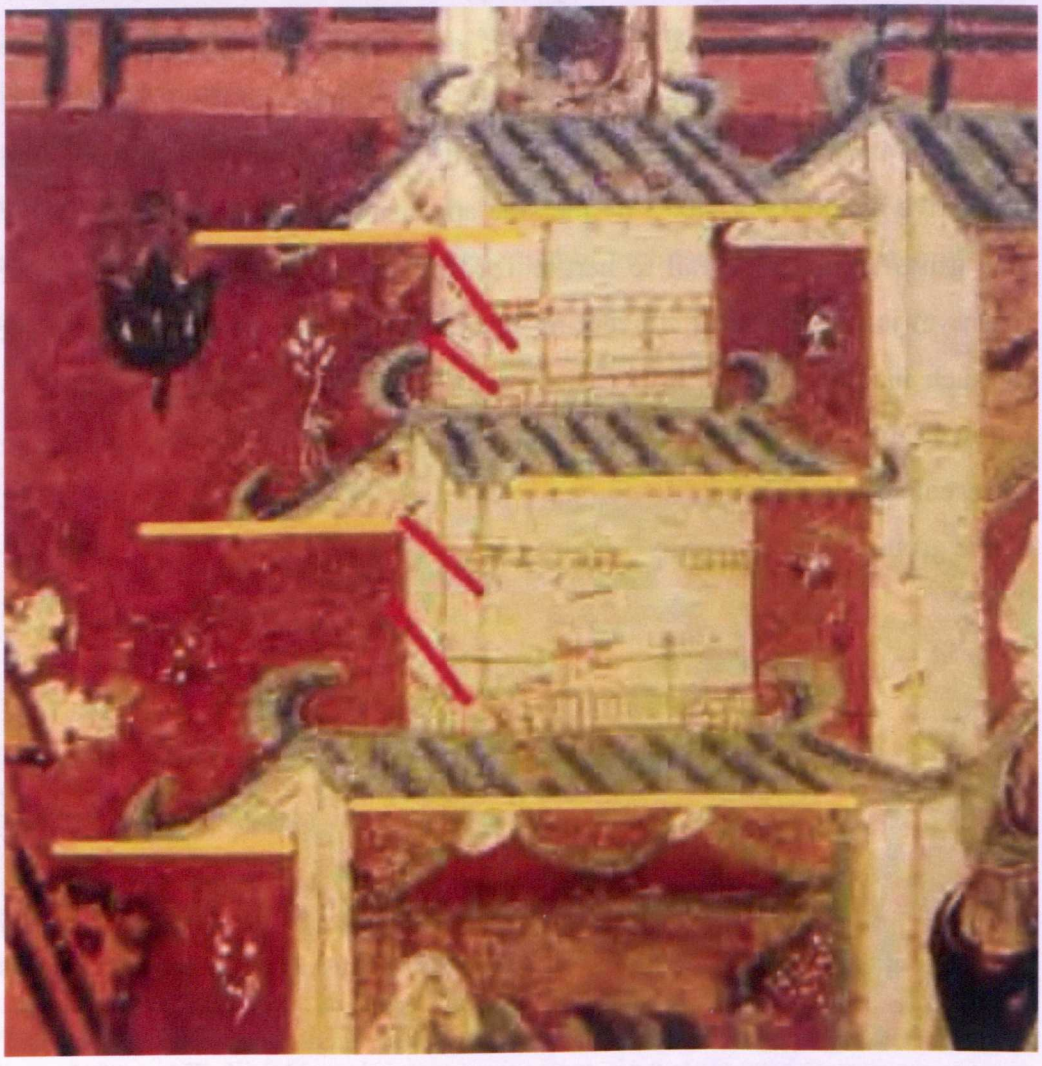

Figure 3-15 Detail of Cause of Sumati Lady, with lines showing different directions of foreshortening and the omission of corner tail.

The tricky "defection" of No. 2 marks the corner decoration of the dragon-tail figure. It should have located in front of the rafters on the roof; but in this case, it is deliberately discarded from where this component should be. It should be more peculiar if considering the law of overlapping, which has been perfectly applied in this fresco to indicate spatial relation between front and back at the points where profile of the central pagoda meets town walls lying behind. So why does this little structure of dragon-tail disappear?

Two optional explanations are at our disposal. One suggests that the omitted dragon tail at each level be the most difficult to represent. Why? If comparing with the other four painted in profile style instead of foreshortening, the missing tail points to imagined viewers at an odd angle. Foreshortening of its severe effect obtains no compatible visual techniques at that time and forbids trustful representation. It is just like Hector's left foot in *Campaigners*, the toes of which have been foreshortened as five tiny dots by the frontal view. So how to present a faithful image for that tail must be a struggling question to answer. If no better solution provided, the deletion of this tail turns out to be better solution; otherwise error may bring disharmony, consequence of which is absolutely unacceptable.

Another possible explanation relates to artistic treatments to figural configuration. Even if foreshortening of the tail is applicable with foreshortening, a protruding figure at this point, either leftward or rightward, would visually destroy the integrity of the profile of roofs, and bring about confusion to overlapping relations between roofs, tails and even side walls of the pagoda. Exactitude representation of scientific perspective certainly suffices at this level, but not for a primitive application of overlapping like this fresco. In other words, the artist might feel rather compelled or self-satisfied to give up this corner tail, as either a compromise or a purposive pattern, to intercede integral space.

A regular axonometric projection of town walls like that in the *An Ping* mural painting of the Han Dynasty [Figure 3-9] is expected to have the alignments in visual lines for structures of equal size, especially if placed in a straight line. In the following figure, a – a of typical alignment between two corresponding

parts of similar objects [see upper part of Figure 3-16 *Cause of Sumati Lady*] is rather a convenient treatment, using physical visible lines to connect two parts of walls with a rim of them. On the contrary, alignment b – b [see the lower part of Figure 3-16] is incompetent to provide latent spatial relation. Similar error exists in c and d as well. It seems that profiles of the wall tower have been rotated to an angle in order to fit the orientation of the wall. The positions of the rotated tower thus are centripetal which is similar to that of the ancient engraving of village [Figure 3-4].

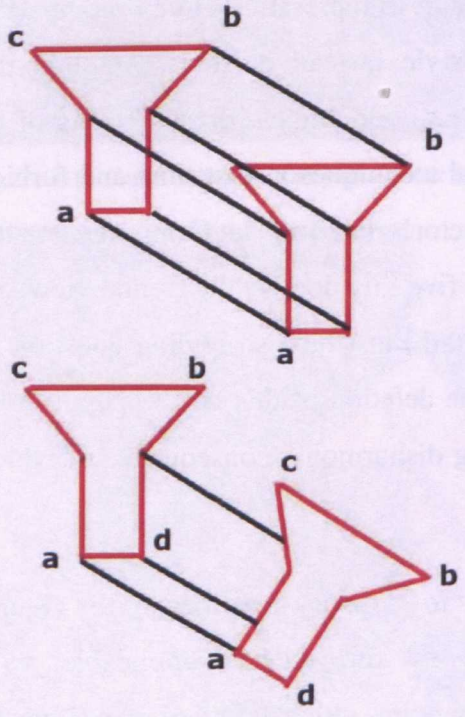

Figure 3-16 Distorted Spatial Alignments of Wall Towers

However, they have distinct orientation. In this fresco, representation of pagodas and other structures stands straight upward. It demonstrates a painstaking procedure to manage the projection of objects from a side view. Struggle with the actual perception and visual representation leads to a compromise: to juxtapose images of two towers which point to different illogical directions.

Those struggles may contribute the frequency of axonometric projection in representation from War Times to the Han Dynasty. Isolated structures and volumes of object can be delivered by frontal profile, yet religious representation of story-telling style requires C-P to interconnect figures with

more delicate spatial depth (Wu Cong, 2004: 71). The emerging requirement is so decisive for later grand-scale scenes of cities that it demands C-P of more than foreshortening; so images of the East Han begins with new experiments of visual techniques. Bird's-eye view is at hand. However, inconsistent trends also appear, some with extending lines concentrated, others of rather an anti-convergent style. Strong aspiration to conquer three-dimensional space has to wait till the Tang Dynasty, when visual techniques become advanced enough to render more grandeur and complicated spatial configuration particularly in the religious representation of *jing tu bian* 净土变, the "transforming figure of *Ksetra*." It is the highest achievement of spatial depth for Chinese Buddhist representation.

3.2.2.3 Architectural Space in Tang Buddhist Representation

Representation of *jing tu bian* has a long tradition of primitive single-point foreshortening, probably dating back to the Han Dynasty. Architectural representation of religious fresco on the wall of *Wan Fo Si* Temple in Chengdu (built around 158-167 A.D.) has been identified with such method (Wu Hung, 2005: 259). In the lower part of this fresco, a landscape that is painted in a way of "ideal homeland," a typical style of Han, superimposes the upper part of representation of single-point foreshortening. This multiple application of techniques for spatial configuration highly developed to be a major feature of Buddhist paintings in the Sui and Tang Dynasties.

Sutra Image of Maitreya in Cave No. 329 [Figure 3-17] is an early-Tang example of such style. One can sense a strong order in the architectural composition. A row of fairy maidens are dancing on the platform close by. Several Buddha are sitting on the middle platforms; dividing them is blank space that could be translated as a symbolic water pond. It is thus intended to express a clear sense of spatial depth, integrating several visual techniques of C-P: the foreshortening of visual lines of handrails, the overlapping between Buddha and the platforms behind, and also those decorative pavements which suggest an over-view position of the beholder. They all help infuse space with a sense of consistence and harmony. The background area has a similar feature of central foreshortening, connecting middle scenes visually by several

bridges. The bridge on the right side seems rather awkward in direction, if comparing it with the foreshortening of others. Meanwhile, both sizes of pavements and the height of handrails are compatible in scale with profiles of Buddha (except for the size of *Maitreya* in the middle, which suggests again a hierarchy of symbolic meaning). Basically the symmetrically deployed "ground floor" illustrates trustful details by means of central foreshortening.

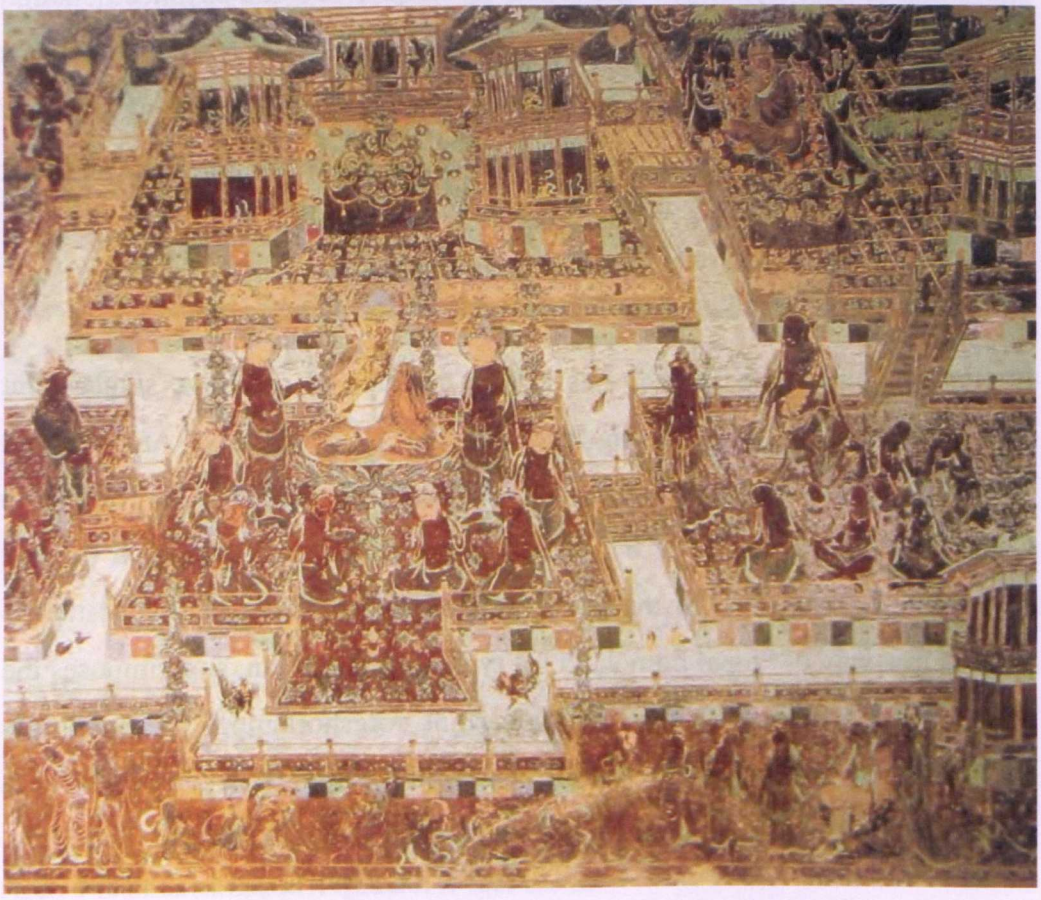

Figure 3-17 Part of Sutra Image of Maitreya in No. 329 Cave (Xiao Mo, 2003)

However, architectural images coordinate less with landscape. Foreshortening of visual lines of the two-storey buildings appears in no way like the pavements beneath them. In other words, buildings and pavements simply superimpose with their proportions defying correlation. Sizes of pavements indicate no volumes of buildings. Furthermore, each building has its distinctive viewpoint, leading isolated central foreshortening of its own. It is similar to the mural painting in *Yi De Prince* Tomb [Figure 3-11]. The technique to see architectural complex from a vantage point is definitely no problem for the artists of this period; because painted stones of Han have

already shown perfect application of oblique projection. So why does the artist in Cave No. 329 still struggle with different viewing positions when it awkwardly contrasts buildings against the ground-floor layout? One possibility may derive from the meaning of architectural image which is just a background for religious rituals. If seen from a vantage point high above, buildings turn to be only with a roof profile. Certainly, an image in this manner could not provide as grandeur a background as that of detailed façade in this fresco. Symbolic meaning of buildings demands it be an appropriate background to embrace the Buddha. Meanwhile, the absence of appropriate technique might be *raison d'être*. Although both oblique projection and foreshortening for either side of buildings are already at the command, further application of both to a single representation is still rarely seen in the early Tang. It is highly possible that the significance of this style was not fully appreciated until later times. Should both of wing structures be foreshortened towards the central axis in such a symmetric composition, the central structure is supposed to have features of both central-foreshortening and bird's-eye view. In this case, it has to make a compromise again to concede with a frontal projection for the middle structure. Representation of the High Tang as such still prefer to juxtapose a frontal image, that is centrally foreshortened and seen at the height of human eye, rather than as a bird's-eye view.

Religious frescos of the High Tang confirms this point of view to a certain degree. Take a look at another example of this period, *Sutra Image of Amitā* on the east wall of Cave No. 148 [Figure 3-18]. It has much more splendid ceremonial scene than ever before. Representational techniques that are used in *Sutra Image of Maitreya* have improved to such a level that the *Amitā* representation becomes a realistic imitation to actual space; for which it seems to overwhelm the symbolic meaning of religious transformation of *bian*. Decorative details associate space successfully by their faithful expression of spatial depth and volumes of objects. Sizes of pavements blocks and the distances between adjacent pillars are compatible in scale with the Buddha figures (see the roofed corridor on the left side with several Buddha playing instruments underneath it). The most essential structure is the central temple; and within it, sequential representation of pillars is convincible enough to

exemplify the application of central foreshortening with considerable accuracy, especially when bases of pillars indicate a strong sense of space that extends backwards. Besides, formation of brackets under the roofs of the central temple perfectly resembles the actual visualisation of a real building. Is it of aesthetical significance for a more grandeur perception or simply another attempt to unify spatial depth?

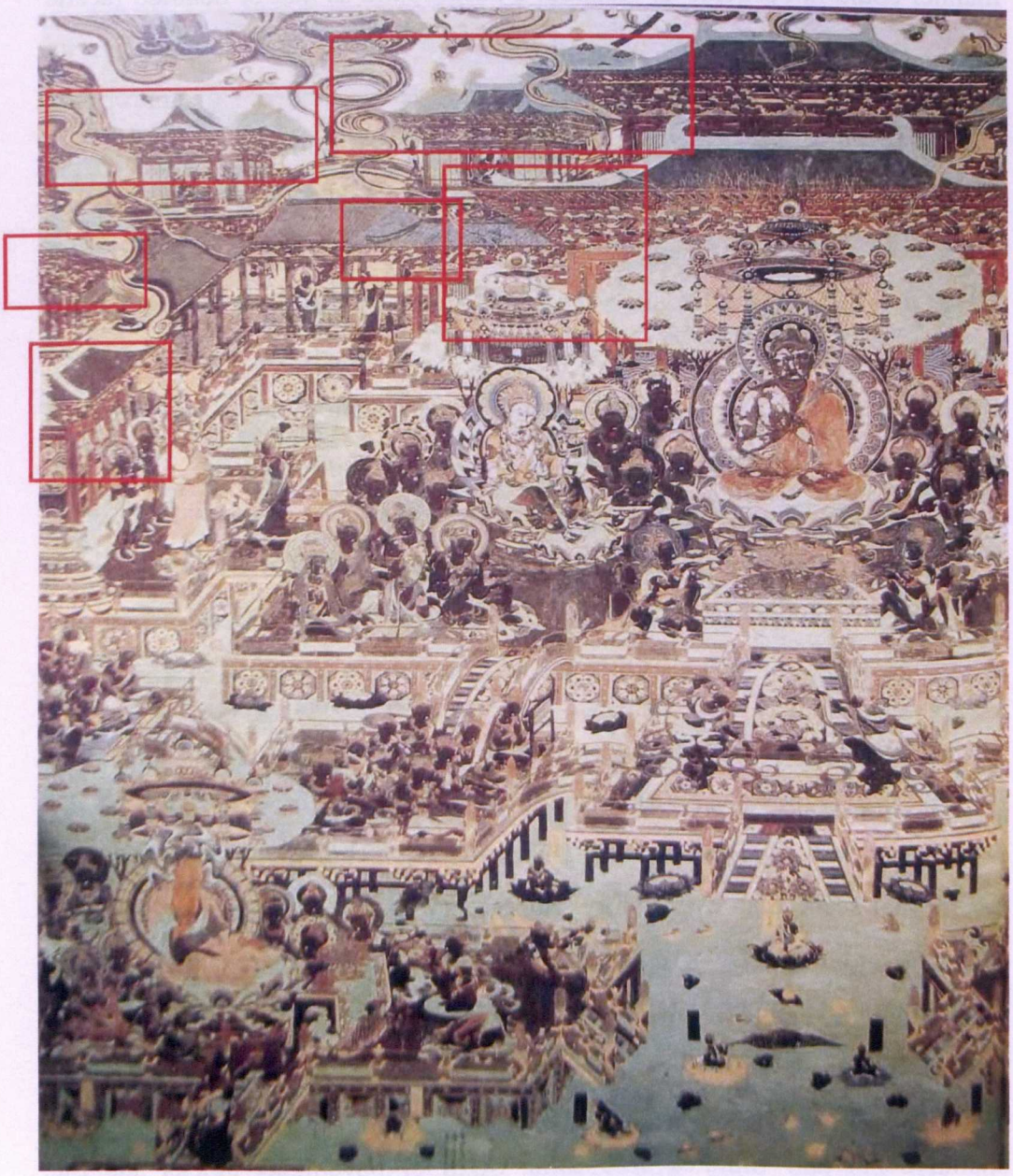

Figure 3-18 Part of Sutra Image of Amitā 观无量寿经变, East Wall of No. 148 Cave (Xiao Mo, 2003)

Wu Hung interprets latent mechanism in this image, disclosing its ultimate function by a similar fresco in Cave No. 172. He firstly makes difference

between the main fresco (in this sense, *Sutra Image of Amitā* in No. 148 Cave is also a central image) and two other images painted on the side walls. Both the side frescos deliver a narration of scenes of religious stories. Those stories documented in the sutra are rather "self-contained," communicating their meanings by nothing but representation itself. The central image like *Sutra Image of Amitā* has a totally different stroy. As the only frontal projection of Buddha figures in the whole fresco, the image of *Amitā* seems to ignore the bustling crowd, gaze out of the framed representation and communicate directly with the beholder. It thus induces participation of beholders. In other words, conveyance of the religious meaning of image relies on the consequent doings of the worshipers. A representation set up in this manner is no more "self-contained" but reciprocal (Wu Hung, 2005: 407) and the central foreshortening style of C-P with such a rare exactitude is helpful to direct the worshipers of this fresco to focus onto *Amitā*. It somehow functions like that of spatial illusion of western central perspective.

However, controversy in illustration of roofs still shows incompetence of forging a unified space. Figures mark out by red squares shows all top-level roofs are presented as if seen from a viewpoint to look upward; while roofs of corridors and pavilions on the ground level are presented from above by axonometric projection. Superposition of two visual methods is quite clear, but not as severe as that of the central temple. The viewpoint to look upward is equally applied to the roof of the main temple on the ground floor, while pavilions nearby on the same level are still with a high-above station point. These two different visual phenomena superimpose so closed to each other that, when narration goes from left to right, the roof of the central temple appears to suddenly turn up over like an opened mouth. It is truly a playful effect well explained by Wu Hung's theory of reciprocal theatricality, which both actor and spectator matter. Requirement of symbolism is perfectly fulfilled, as well as harmony in architecture, and consistence of spatial depth.

Religious frescos of Dunhuang till then thus have made a great achievement in C-P of single-point and two-point foreshortening, not of perspective as modern scholars are inclined to believe. Visual lines of perspective are

supposed to concentrate towards the vanishing point, while those in Dunhuang frescos remain parallel. This particular visual phenomenon has been given by many explanations, the most acceptable of which is called "glide projection."[39] However, Xiao Mo is definitely correct when saying "... it seems that the integration and variation of external space, which is essential for the aesthetical expression of the architectural space, is still under development." One must accept that the visual configuration of religious representation in Dunhuang has never been as scientific-based a system as is modern western perspective. In later periods when paper greatly enhances expedition of visual representation, corresponding changes in aesthetic tastes after the Sung (960-1279 A.D.) result in a reluctance to push forward innovations of C-P of central foreshortening towards perspective. Artists begin to devaluate realistic visual manner as inappropriate and meaningless. Chinese visual representation thus steps into self-referentiality in terms of subjectivity rather than realism. In the next chapter, this transition in pictorial idea will be fully examined by another visual scheme of C-P, representation of landscape; for spatial progress of this kind is more everlasting than that of architecture in the paper-based visual representation. It does not mean that architectural representation is of no significance in later periods; yet one has to accept a negative fact that little improvement in technique is achieved to represent spatial depth of architecture after the Sung Dynasty due to the transition in symbolic intention.

Architectural representation actually has its last glory in the Sung Dynasty when *Jie Hua* 界画, the ruled drawing of architecture, is officially regarded as an indispensible pictorial method. It may have controversial reasons. Although pictorial idea begins to change from the Sung, it is just during the same period that more attention has been paid to the learning of science and technology. Vigorous development of this learning is meant to bring together a systematic and technical method for realistic architectural representation of spatial depth. Should visual representation be solved as a scientific issue, to paint pictorial

[39] Chinese scholar elite Wu Cong 吴葱associates glide projection with Buddhist representation of *jing tu bian*. Italian painter and architect Viola-Zanini develops a vanishing-axis construction of similar characteristic. Many other visual techniques are also included as part of glide projection, such as vanishing plane, herringbone and inverse perspective. It is helpful to understand the mechanism of the parallel lines in the frescos.

space will have been the same as that to construct a building. Intentions of realism thus ironically reach the summit; and in a way the style of *Jie Hua* has unquenchable achievements of realism in the period of Sung.

3.2.3 Spatial Representation in the Ruled Architectural Drawing

The style of *Jie Hua* is a particular representational manner known as "ruled-line" painting, which makes use of mechanical drawing instruments including ruler and compass. Typical ruled drawing introduces a strong sense of beholder's eye positioned at a fixed vantage point according to depictions of architecture. Richard Vinograd (1988: 371) describes this kind of experience as "... impressed with the miniscule detail because it [the scene] suggests a heightening of perceptual capabilities, an exhilarating sense of supernormal attentiveness." Early styles in *jie hua* are experimental and representational. Religious frescos of the Tang have given *jie hua* competence of delivering highly comprehensive spatial configuration. It is not until the Sung Dynasty that *jie hua* is enlisted as one of the official categories of painting, but it may have a longer history; scholars believes this ruled representation may have correlatively enhanced the progress in landscape painting after the Tang.[40]

3.2.3.1 The Development of Realism in Ruled Representation up to the Song

Wilfrid H. Wells has traced clues for perspective in *jie hua* back to the ancient painting theory of *Lun Hua, Discussion of Paintings* attributed to Ku Kai-chih 顾恺之, a highly honoured painter in the East Jin Dynasty (around 4th A.D.). Alexander C. Soper finds in *Discussion of Paintings* many interests in spatial relationship, including an early appearance of C-P as "overlapping" and relative distance. When describing *The Founding of the Chou Dynasty*, Soper (1948: 176) designates the style of "piling up" referring to Ku Kai-chih's manner of figure arrangement. It implies vastly in later literature the

[40] Chinese scholar elite Li Xingming 李星明articulates the water-mountain style of landscape painting after the Tang facilitates as a major affected manner of representation of *jie hua*. See his book *A Study of Tang Tomb Murals,* 唐代墓室壁画研究 (Xi'an: Shanxi People's Fine Arts Publishing, 2005), p.33. This inclination later declined in the Ming Dynasty when architecture painted in the form of *jie hua* depreciated as a supplement to symbolic scheme. For that, it loses the representational meaning and becomes a reflection of fantasy.

overlapping configuration of mountain shapes, and those receding will be placed at a higher position. In *Account of Painting the Cloud Terrace Mountain* 画云台山记 he says: "... the sun in the west is disappearing [behind] the mountain, so that their relative distances are clearly distinguished 西去山别详其远近."[41]

Figure 3-19 Admonitions of the Instructress to the Palace Ladies

However, Ku Kai-chih's application of his visual theory that could attribute to *jie hua* are rarely seen in his landscape painting, but more explicit in images of interior space. Soper (1948: 178) once calls attention to Ku's *Admonitions of the Instructress to the Palace Ladies* [Figure 3-19], taking it as a "general use of a conventional perspective from above in showing furniture ... and the effective grouping in depth of the family, accomplished both by overlapping and by a discreet diminution." In this work, Ku furnishes a beautifully decorated curtained bed with a couple sitting in the curtain. The lady leans on the side fence while the man sits at the edge of the bed. The style of the configuration within the bed seems to be perfect axonometric projection; distribution of fences and the oblique sideway ideally provide faithful space.

[41] For a detailed translation of *Account of Painting the Cloud Terrace Mountain*, see Michael Sullivan's *The Birth of Landscape Painting in China* (London: Routledge & Kegan Paul Ltd., 1962), pp.94-101.

Most successful is the spatial depth illustrated by the overlapping between furniture and human bodies. The lady is covered up entirely except for one of her arms leaning outside the enclosure. The same technique is applied to the man whose body is hidden behind the tiny decorative door of the bed. Meanwhile, his legs overlap the profile of a stepping couch 踏床, a thin and long piece of furniture beside the bed. Widths of the units of fences measure a strong sense of distance; constant scale in furniture and human bodies overarches spatial depth in the whole representation. However, it still leaves an interesting point for our debate: the way of the covering of the bed that defies the consistence of visual methods. When extending far away, the cover is gradually enlarged in width. It is a kind of anti-convergence, not of perspective and diminution as Soper claims. Above all, Ku Kai-chih's visual techniques are of successful innovation; those which once were only useful to abstract overview of grand scenes can now be applied into a micro-scale picture to associate bodily experience.

When disclosing Ku Kai-chih's rolling painting *Palanquin Scene*, now in the British Library, Wilfrid H. Wells describes the spatial depth as follows:

> "... Now oblique parallel lines do not in themselves indicate depth, but when the ground surface of such an object is drawn obliquely, it has its sideways implications as well, as has been remarked, and is less clearly at the informative, merely deflected angle to the perpendicular, especially if its environment and the arrangement of objects upon it carry cumulative suggestions of depth ... it is possible that in the Ku Kai-chin Roll the artist's intention was the same, that he desired deliberately to reduce the representation to the flat by the use of inverted perspective in progressive measure" (Wells, 1935: 44-45).

The supposed "inverted perspective"[42] produces equalising value to the back and front, representing the back with a dimension that seems more appropriate

[42] To call any Chinese visual phenomenon with "perspective," in the point of view of this thesis, is questionable. However, it is helpful to quote the key terms unaltered, especially when trying to understand what other resources deliver around similar ideas.

to the front. Visual effect of foreshortening is thus neutralised. Wells defends that it would be wrong to pre-suppose in it a viewing position of the imaginary spectator. Ultimate spatial depth is not indicated by oblique projection of lines (neither is it in *Admonitions*), but by a series of stratified and overlapping surfaces that imply equivalent redundancy of the same feature. So if the back is equally as important as the front, why is it necessary to make difference in their dimensions?

When techniques of *jie hua* are applied in the large scale, architecture is a sound choice. It becomes much more popular after the Tang and ultimately prestigious during the Sung. The first documented appearance of *jie hua* as a specific topic for architectural representation can be found in Kuo Jo-hsu's 郭若虚 *Tu Hua Jian Wen Zhi* (图画见闻志, ca. 1080):

> "In painting constructions, calculations should be faultless, and brushstrokes of even strength should deeply penetrate space, receding in a hundred diagonal lines. This was true of the work of painters of the Sui, Tang, and Five Dynasties down to Kuo Chung-shu (郭忠恕) and Wang Shih-yuan at the beginning of this dynasty (Song). Their paintings of towers and pavilions usually showed all four corners with their brackets arranged in order; they made clear distinctions between front and back without error in the marking lines. Painters nowadays mainly use the ruler to accomplish their ruled line paintings (*jie hua*). In the differentiation of bracketing their brushwork is too intricate and confusing and lacks their predecessors' grandeur and sense of naturalness."[43]

In this paragraph, a most famous *jie hua* painter, Kuo Chung-shu 郭若虚, is mentioned as well. He is characterised most succinctly in later writings by his competence to paint *jie hua* as the "faultless" medium to "penetrate space." In Li Chih's 李廌 *Hua pin* (德隅斋画品, late 11th A.D.), architectural paintings of Kuo Chung-shu is described as that could really be passed through. An

[43] This paragraph is quoted from Robert J. Maeda's 'Chieh-hua: Ruled-line Painting in China' in *Ars Orientalis* Vol. 10, (1975), pp. 123-141. The translation is adapted from Alexander Soper, *Kuo Jo-hsu's Experiences in Painting* (Wash., 1951), p.12.

infinitesimal is invented for C-P to mark off a foot, then ten feet. With increasing multiples working in a way like what Durer and Villard de Honnecourt did for perspective, building structures connect with consistent scales so accurately that no tiny discrepancy can be identified within his painting.

Credible proportioning is the key feature of Kuo Chung-shu's architectural paintings. One plausible reason for this is that *jie hua* painting can be used as representation in assistance of designing actual construction. It is said that Kuo Chung-shu himself is truly a master of actual practice of masons and carpenters. In this sense, *jie hua* may serve just as a design stage of sketch to present details of the building in an undistorted and faithful manner. It is thus similar to the application of axonometric drawing in the western tradition. Visual depth is actually not as important as showing off configuration of structures. It is rather an auxiliary tool than a visual goal in *jie hua*. One of the limited works attributed to Kuo Chung-shu is *Two Boats on a River after Snowfall* 雪霁江行图 in the National Palace Museum, Taiwan [Figure 3-20], which is composed of two large house boats with a smaller one floating side by side on the river. Most of the debate around this painting basically focuses on the realistic style of shadow casting over objects and the splendid details of structures of boats. Architectural elements are credible in their scale to human figures. Identical axonometric projection of structures has an integral relation for the first time, as parts of the environment are no longer isolated; nor do they superimpose each other. Besides all these features, particular interest may pay to the cables connecting two masts and other body parts of the boats, which indicate special sequence of rendering.

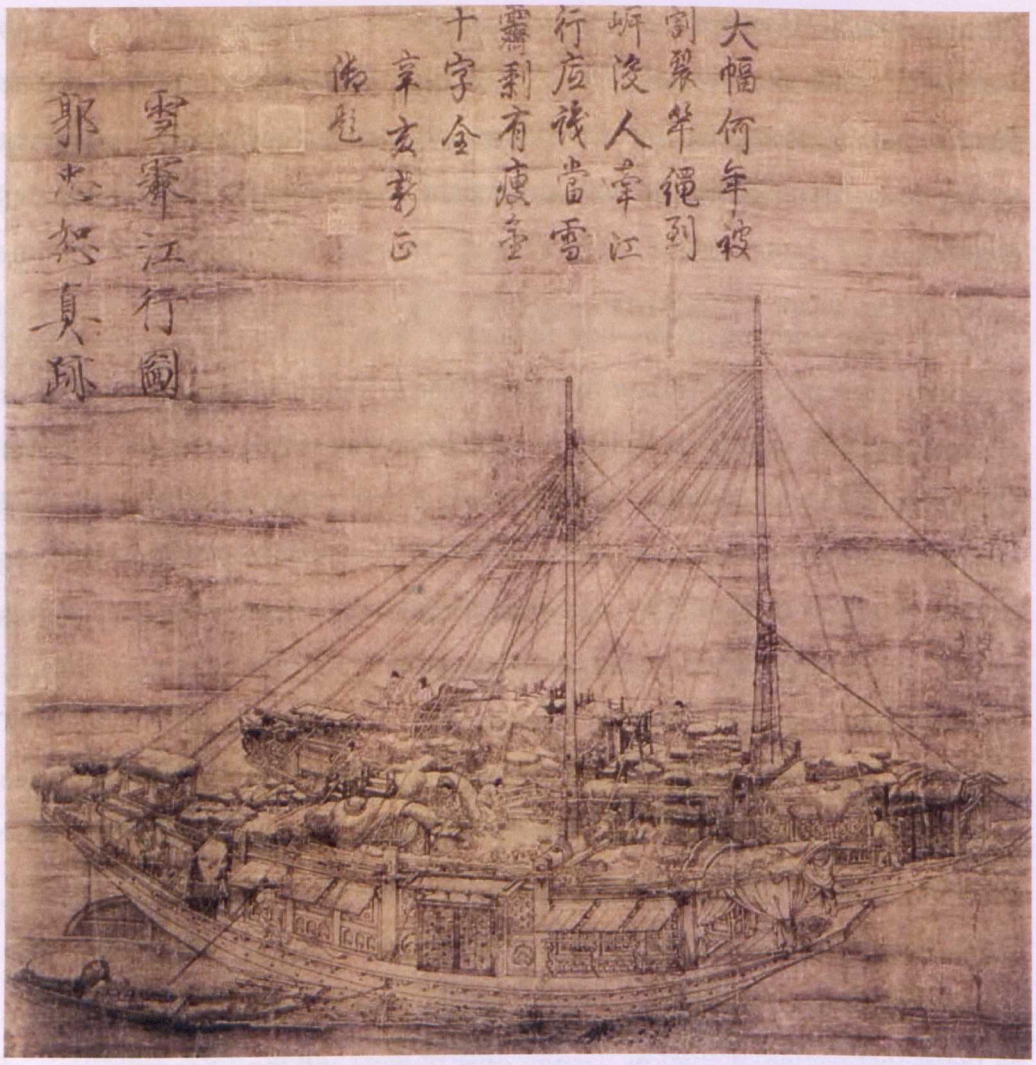

Figure 3-20 Two Boats on a River after Snowfall, Kuo Chung-shu, Sung Dynasty. National Palace Museum, Taiwan.

A typical way to indicate overlapping of compositional parts is not necessarily intended to follow the visual sequence of their spatial depths, from front to back. However in this painting, one can easily notice that the overlapping cables should be delineated firstly to provide necessary blanks. As a matter of fact, the cables of the front boat, especially the bunch connecting the front side of the boat, must be processed in the first step. They are all painted as two thin lines while keeping the uncoloured inside, which means to spare the cable a blank area of width. After that, more lively details can be added for cargos and human figures, and discreetly treat these figures, bearing in mind that the edges of the cables may interfere with latter overlapping profiles. Back boat applies the same. The reason to call attention to this feature is that Kuo Chung-shu must have followed this conclusive sequence for the representation of overlapping. It would be insane for other possible manners. In other

primordial types of *jie hua*, overlapping can be achieved by superposition of different parts; yet it can be used freely and separately, even if the painter possibly knows about a "definite" recession in spatial depth that makes one object cover another. However, for *Two Boats* it is not an option but a prerequisite. Kuo Chung-shu has to firstly grasp the whole spatial configuration which, in this case, is the starting and ending points of the cables, altogether with what objects they overlap and interfere with. And then he draws the cables to spare the required blank space aforementioned; because this blank is critical to express overlapping. In other words, delineation of the cables implies that the painter must have had a general but accurate spatial sense before starting this representation, and moreover, he obeys this spatial sequence in an "uncompromised" way by using exactitude of infinitesimal. Kuo Chung-shu's persistence derives from his intention to provide image in a constructible and logical manner; and it is truly a great achievement that can be detected through his practices. Additionally, it would be rather trickier to imagine if he were willing to set up those cables in a way that they extend from the back mast and connect forward to the front boat. This setting will bring about interesting spatial perception and more explicit evidence for his encompassing sense of space.

Another topic of *Jie Hua* as Kuo Chung-shu favours is the water mill. Li Chih records in *Hua pin* a water mill painting that attributes to Kuo, dated 934 A.D. The appearance of this structure is highly constructible; which accords with supposed requirement of knowledge in mathematics and engineering. Although Kuo's painting does not survive, it is still possible to grasp a same idea from the water-mill paintings from another famous painter, Wei Xian (卫贤, active ca. 960-75), who specialises in painting both water mills and freight carts. As a masterpiece of his *jie hua*, the *water-mill* painting in Shanghai Museum [Figure 3-21] is capable of conveying an iconographic and stylistic impression of such a scheme of C-P.

It is rather interesting to find the process of unfolding and reading in this hand scroll which follows a sequence of flour making. This water-mill painting appears to be highly and typically ordered in spatial configuration as a

common feature of C-P: a wine shop is located at the lower-right corner, and the beholder can then take a ferry across the river to the right terrace; on it, lots of newly-harvested grain is being processed for the grinding later in the mill, etc. Basically there applies a clear diagonal composition, as well as a spatial recession, compatible with the movement of the milling operation. The emphasis on mechanism of axonometric projection is consistent throughout representational space; and architecture faithfully scales both in decoration and to human figures.

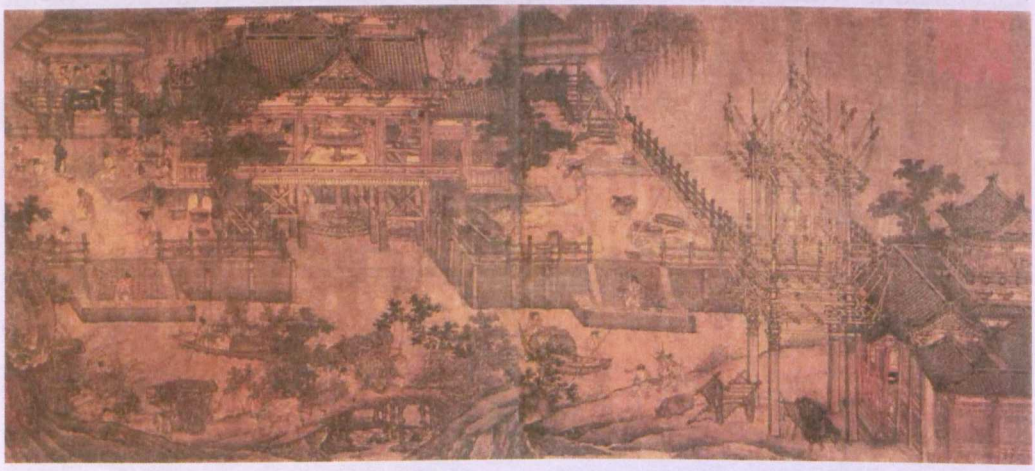

Figure 3-21 The Water Mill, ink and colour on silk, ca. 970s. Shanghai Museum

The feature of overlapping is perfect in this painting. Wei Xian facilitates a rather archaic manner when using a river and old trees to divide the painting into a series of scenes. Within each demarcation, superimposed boats and landscape fill visual gaps in between. Besides these routine treatments, Wei Xian puts a wooden structure by the side of the wine shop at the lower right corner. Dedication to knots and joints has once again implied an attitude to such representation that a pictorial imitation of spatial depth in architecture is not enough. Rather, architectural details must be painted with exactitude. The painter probably struggles to provide an engineering experiment, as Kuo Chung-shu does, to master "mathematical calculation, clarity in architectural description, and legibility in mechanical engineering" (Liu Heping, 2002: 569). In the light of such a scientific construction to associate both architecture and environment, he is finally able to represent available components of a milling process within such a limited area of a hand-scroll.

But it is still dangerous to suppose an inclination for him to make an illusion of spatial depth. The grandeur composition appears rather accumulative, not projective. A projective image is meant to let viewers project their locations into spatial illusion, by which the image seems available to enter. Conversely, a basic idea here, if taking a conservative viewpoint, is to congregate several scenes of workflow. Judging by overlapping, the general spatial configuration in this water-mill painting would be rather more primitive than pre-Tang Buddhist frescos. Another critical feature of foreshortening is missing here. Functions of this visual method have already become explicit in the painted stones of the Han, yet now temporally desolated. However, with such a high mastery of accurate scale in this realistic rendering of architecture, which is further enhanced by overlapping, it delivers a grandeur representational space that has never been seen.

Water Mill representations demonstrate mastery of visual techniques. Attention and familiarity to constructional details definitely result from a preference to science and technology in the social culture of the Sung. In later periods, this tendency flourishes and leads to further dissatisfaction to simple resemblance to object. Architecture becomes popular topic of resemblance, but if still being isolated from surrounding environment it is impossible for architecture to contribute an overall realism of C-P *per se*. In Zhang Zeduan's *Qing ming shang he tu* (清明上河图, *Going Up the River for the Spring Festival*), it appears that such difficulty has been perfectly solved. The *Qing ming* scroll makes perfect integrity of spatial continuum, including surrounding landscape, human figures and architectural structure. Discussion around the spatial composition in this painting is rather boundless. It is thus not the intention of this thesis to quote and paraphrase a general description of spatial depth of C-P from available scenarios, but to examine three selective parts in the painting with the help of three visual techniques.

Journey starts with the part of *Hong qiao*, the rainbow bridge [Figure 3-22, upper], at the head of it standing a wooden structure. Its form imitates that of the water-mill painting as a visual mark indicating mastery of architectural rendering. But it is not convenient for observers to identify foreshortening

from this trivial structure due to its limited size. Fortunately, the rainbow bridge adjacent to it goes across the river to the distant bank. The physical function of this bridge has a definite spatial sense: that it has to "go across" a certain area. Beyond this spatial connection, one will not hesitate to see houses on both sides of the river which are visually different in sizes; the biggest contrast can be found in images of roofs. Although this feature cannot be simply as a matter-of-fact because it is possible that their volumes are actually various, a visual phenomenon of foreshortening appears convincible. The size of human figure on the distant bank is much smaller than those of the merchants wandering on the nearer bank. According to this, it is reasonable to imagine that the painter may have at disposal a visual phenomenon of gradual shrink in figural size, especially when bunches of people spread along the bridge and extend over the other side of the river. Dramatic sense of spatial depth is greatly enhanced by the feature that, as already disclosed, a structure like a bridge should in its nature go across a certain distance. It is rather a paradigm of tradition to accept and follow with no geometric and mathematic calculation involved. In this sense, the aforementioned *water mill* does not have a similar enhancement to visual space. Alternatively, the terrace to process grains in the Shanghai *water mill* painting may have similar function. Unfortunately, the painter of *water mill* keeps the terrace blank without any treatment to provide it with a sense of spatial occupation.

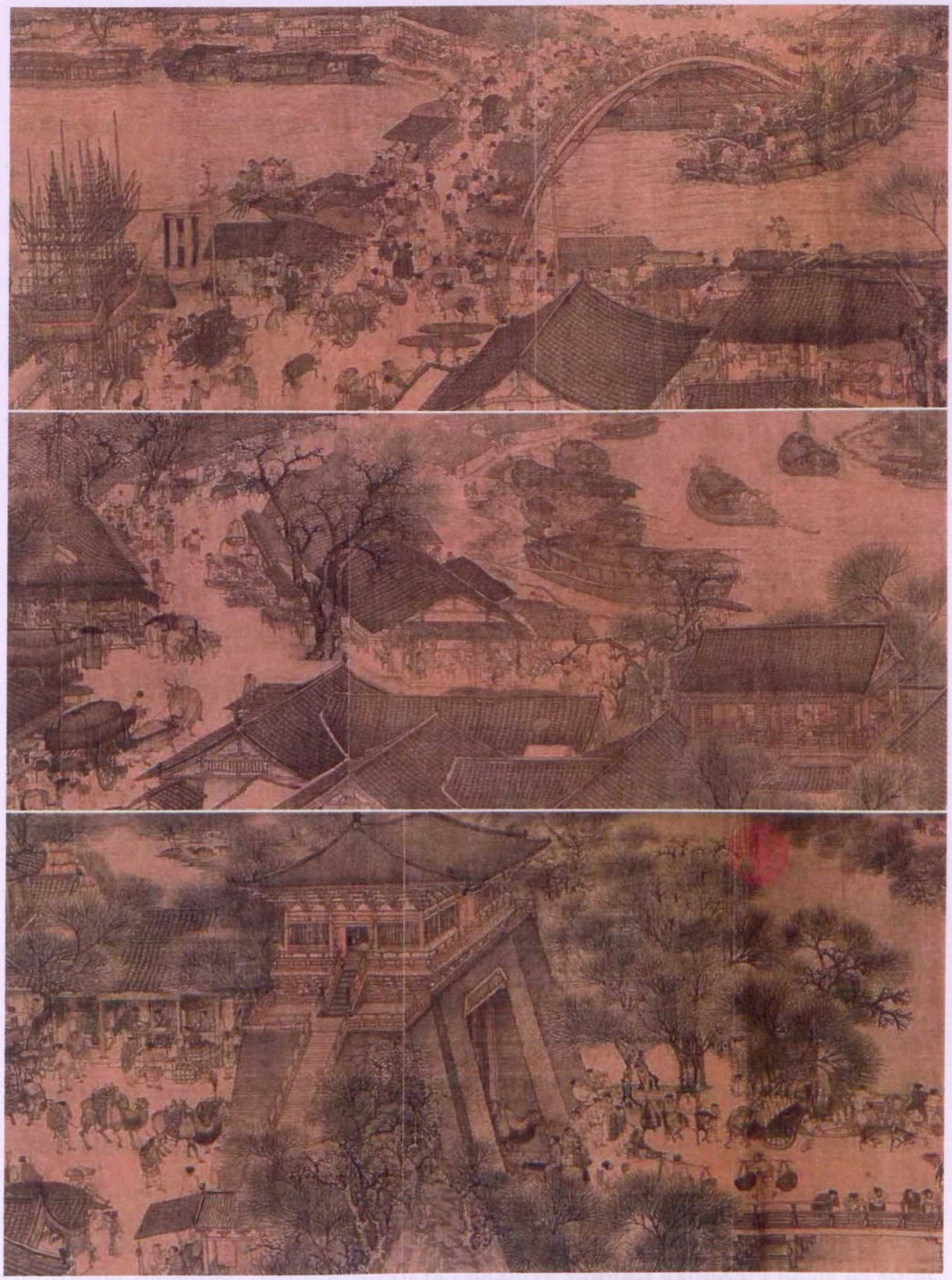

Figure 3-22 Going Up the River for the Spring Festival 清明上河图. Zhang Zeduan, Early 12th A.D. Palace Museum, Beijing

The floating boat is of particular interest as well. Visual representation of boats is no longer a rare topic since the times of Kuo Chung-shu. In *Two Boats* [Figure 3-20], images of boats are rather projected in the axonometric manner and thus overlap each other, but no foreshortening of figures exists due to the frontal view of boats. In *Qing ming*, the boat beside the rainbow bridge is painted by an oblique projection, faithfully illustrated according to scale, angle

and with realistic renderings of structures. Several obviously foreshortened boats locate at the other side of the bridge, and along the bank from where the river extends further [Figure 3-22, middle]. This group of boats is represented as if seen from different visual angles. The biggest one has a similar angle of foreshortening as that beside the bridge. Following in a gradual sequence, the further up the boat is located, the more foreshortened its image appears into a frontal view. The painter treats the blank area of river not as an encompassing background to superimpose several boats that would have been seen from a similar angle of view; but on the contrary, he configures representations of boats as compatible with the direction along which the river flows to far distance. In this sense, the river is no more an untreated blank area; it has physical functions like a ruler to measure the locations of boats. It works just like the rainbow bridge to accommodate auxiliary images of foreshortening and maintain its own latent meaning of spatial occupation (depth by going across space in its nature).

The pattern of boats and riverbank streets is of same purpose: blank areas of streets are not symbolic, but with a sense of spatial extension. Along with them, shops and taverns are gradually foreshortened in size to associate their extension to the far distance appropriately.

Some scholars find the representation of a city gate as plausible application of perspective [Figure 3-22, lower]. If comparing with the western tradition of visual culture, it would rather be a primordial solution before the early Renaissance when perspective had still not been brought into light. The city gate visually isolates itself from other structures, yet prevails with surrounding trees. Even with a clearly foreshortened image, the disconnection of it with surrounding space provides no sufficient conveyance of perspective. It is because Chinese visual culture lacks and depreciates scientific calculation to perspectival recession. In this case, it seems to be a compromise to make certain level of "visual correction" which co-exists with the axonometric projection of the city gate, in a way that ancient Greeks make resemblance to actual pillars standing straight up and diminish visual distortion. Minor visual

corrections are understandable manners for both *Qing ming*'s gateway and classical column to please the eyes with more faithful details.

Based on the three visual phenomena disclosed above, *qing ming* seems not an appropriate example of representation to fulfil an *illusion* of spatial depth of C-P, in a way of perspective as it is supposed to be. Spatial depth in it denies scientific calculation; thus both foreshortening and overlapping, though explicit in the pictorial space, are neither accurate nor consistent to secure C-P with a single vanishing point. Despite all these defects, construction of pictorial images in this painting is rather reasonable, bringing no difficulty to identify a trustful spatial perception.

It might have another explanation: the Chinese visual culture of C-P in *jie hua* for architectural representation may imply a particular representational manner to *indicate* spatial depth. Feasibility for this mechanism relies on the unchallengeable acceptance to paradigms of ancient images, and a persistence to maintain in each pictorial object its inherent spatial dimensions with the help of visual techniques like foreshortening and overlapping. Association between architecture and environment in Western Perspective relies on scientific calculation and geometrical deployment; but for Chinese counterparts, nature of spatial occupation feels no danger even if without accurate construction of this association. It derives from a mundane experience that physical bodies of architecture and environment should occupy and thus *indicate* such an association in between.

To distinguish spatial intentions between *illusion* and *indication* is of significant meaning. Since western perspective implies symbolic ideas as soon as it projects viewers into an illusory space, representation of this kind has preconditions of both philosophical thinking and geometrical projection. Both of them lead to a self-referential system of perspective; it can even survive as an independent topic of scholarship when its association to visual media disappears. Spatial depth represented in this manner is thus an *illusion* in the form of an independent visual system. It actually requires no body to represent, thus has nothing to do with pictorial space. To apply it is intended to make its

possibility evolve. In this process pictorial space has nothing to do with visual perception and thus cancels the bodily penetration of the eyes.

For representation of C-P that *indicates* spatial depth, both meanings and functions of represented objects are practical. Visual technique is for vision *per se*; at the bottom line it is impossible to deny the bodily experience as necessity to represent visual perception. By using the word "*indicate*," C-P intends to demonstrate that spatial depth does not yield in its justification to individual manners by which various artists incline to see the world. Indication is rather a precondition for such kind of C-P in which spatial depth ultimately lives in body of architecture and environment. Again, a bridge should in its nature cover certain distance for a river to pass through; boats should be foreshortened according to the direction of the extending river. This gives spatial depth a free relation to visual perception, so the task to *indicate* such spatial sense becomes much easier. Visual representation of *indication* of spatial depth means no illusionary dimensions of objects, but an "already-existing" dimension and consistent scale.

"Indication" of C-P accomplished in Chinese visual art up to the Sung Dynasty has stood upon a practical rather than a philosophical basis. To be more explicit, things seldom change though transforming in appearance; in Chinese visual culture, sizes of bodies is painted not by a self-referential judgement on vision, but rather by its nature. On the other hand, *indication* in representation of spatial depth would not be so efficiently expressed were it not for a presupposed interrelation between architecture and environment. Indication cannot work alone. As *qing ming* demonstrates, spatial depth of the rainbow bridge is pre-assured by the nature of the bridge. Its spatial depth is not envisaged by symbolic, illusionary and metaphysical deduction of perspective; it is also not constructible in terms of scientific calculation like the self-referential descriptive geometry. [44] To compensate, the Chinese

[44] Comparatively, if taking descriptive geometry as an extreme example, representation of space as an illusion on paper will not be considered as appropriate and acceptable, were it not able to be calculated and constructed according to the deduction of representational lines in this system. For Chinese "ruled drawings," objectivity and spatial depth of body are ascertained, simply and solemnly, by their nature. Again, indication of visual representation of object is just to provide more visual evidences to confirm this fact.

architectural representation of architecture delivers a twofold function: a common sense of spatial depth in its nature with assistant visual techniques like foreshortening and overlapping.

Lastly, these complementary visual methods further enhance visual impression of spatial extension, especially when both architecture and environment are overlapping or foreshortening in a consistent way. Perspective in Panofsky's point of view has a symbolic form to make illusionary space, due to its self-reliable meaning and function. On the contrary, the Chinese architectural representation of "ruled drawings" as indication of spatial depth of C-P is never isolated from its correlating environment with a practical purpose.

3.2.3.2 Later Periods of Ruled Architectural Drawing

Realistic manners in the ruled architectural drawing continue to prevail in later periods. Yet in the late twelfth-century *jie hua* drawing emerges as a trend of patternisation to narrow down pictorial ideas (Maeda, 1951: 137). Stylistic intentions in space have changed since the first half of the century; its exponential has a transition from form and visual techniques of architecture to an emphasis of the Southern-Song which takes architecture as complementary part of pictorial space of landscape.

Such a change in taste begins with the subject matter of painting, in which grandeur landscape is distributed according to sequence of literary narration. Narrative spreads over "the entire expanse of the landscape, establishing vibrant and effective interrelations between the human and natural elements of the composition."[45] Landscape has thus overwhelmed architecture in favour of continuous movement and interplay of narrative foregrounds and backgrounds. Architectural composition of constructible spatial depth thus loses its spatial meaning. Association in spatial depth between architectural body and environment that was once unquenchable accomplishment of C-P is now disfavoured; visual techniques like foreshortening which have long dominated Chinese visual culture are also abandoned purposively.

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[45] Trousdale, W., 'Architectural Landscapes Attributed to Chao Po-chu' in *Ars Orientalis*, Vol. 4 (1961), p.290. The same idea is expressed by Osvald Sirén in *Early Chinese Painting*, Vol. 2, p.68: "historical events were freely translated into poetic chronicles, and actual observations blended into decorative design ..."

Chao Po-Chu (赵伯驹, 1120—1182) is one of the most celebrated among *jie hua* painters of later periods. When describing his *Pavilions of the Han Palaces* [Figure 3-23], William Trousdale adds a note as follows:

> "The painting as a whole is rather more restricted in subject than in suggestive detail; the complexity of design and the detailed and decorative character of the architectural and natural forms do not disrupt or unbalance the deeper concern for the landscape. And this is perhaps more certainly a landscape in which the influence of the Southern Sung painters has not been superficially adopted to a painting of conservative form, but thoroughly absorbed in a new and distinctive mode. Buildings are no longer set upon or among landscape elements, but are themselves a part of the landscape, and if some of the architectural precision has been sacrificed, this is compensated for by the relative simplicity and scrupulous integrity with which they are depicted within a unified composition" (Trousdale, 1961: 300).

Figure 3-23 Pavilions of the Han Palaces. Palace Museum, Taiwan. (After O. Sirén, Chinese Painting, Vol. 3, London, 1956, p. 272.)

This unified composition is not based on spatial occupation of architecture, but symbolic interaction between parts of landscape. In this sense, it is rather an

egocentric reflection that fails to create solidity of spatial depth. When mountains superimpose palatial architecture, they provide neither subjective illusion nor realistic indication of spatial depth, but a visually flattened background to hold architecture as part of atmospheric landscape. This treatment becomes more explicit when Wang Chen-peng 王振鵬 in the Yuan Dynasty (around 1206-1368) paints the *Dragon Boat Regatta in the Chin-ming Pond.* Realistic pieces of representation of architecture function as isolated and moveable icons subject to tastes of the painter. When architecture gains empathetic significance and becomes subordinated to landscape, archaic formulae of C-P as a manner of accumulative spatial composition is rejected and reborn.

A strong desire thrusts since pre-Song periods to present conceptual and formalistic order. It favours symbolism of iconological configuration, yet suppresses realistic representation of architecture. Potential answers to this tendency may derive in the transition of subject in the form of Scholar-elite painting and garden from the Yuan Dynasty. Later association of architecture and landscape demonstrates in Chinese visual representation of spatial depth a change in role, when architecture yields to encroachment in physical sense and environment gradually claims more poetic favourites. Story of representation of architecture weathers; yet that of environment has just begun.

Summary

Realistic development of C-P of Chinese visual representation of space can be divided into three collective phases: the early-stage representation of secular space, religious transformation during medieval times of the Tang, and the ruled architectural drawing of the Sung. All three constitute the very period of realism and representationalism in Chinese visual art [Appendix 2/4], though later it begins with a different scheme, a symbolic and commentatorial style.

Chinese early-stage visual representation of secular space makes progress in developing and integrating new visual techniques into representation. Large

volume of visual interpretation discloses endeavour of ancient artists in representation of spatial depth with basic visual manners, such as overlapping, superposition, and foreshortening, as well as oblique and axonometric projection. A spatial order is thus established, either hierarchical or narrative. Axonometric projection has been preserved as an unquestionable manner since its birth out of simplified oblique projection; and to a large extent it functions as a paradigm of visual law of C-P, to some extent for Chinese artists only in need of improvement, not subversion. Artists struggle to make axonometric projection as perfect as possible, altogether with consistent scale. In the meantime, medieval representation of Buddhism often has semi-realistic yet symbolic forms, if considering its religious meaning and ceremonial function. Although there is also a continuous upgrade in presenting space with more pre-perspective methods, C-P never comes up with a similar overarching scheme like perspective. Most of the time, visual techniques juxtapose and mutually benefit each other to meet metaphorical requirements of painting.

A high level of realism and representationalism is achieved in the form of the ruled architectural drawing during the Song Dynasty. In it three key features correlate: overlapping, foreshortening, and the high mastery of accurate scale in realistic architectural representation. Successful association between architecture and environment gives the whole representation a faithful sense of space. However, unlike Renaissance intention to make perfect illusion of space, Chinese counterparts persist in their customary system to take representation as spatial *indication*. An indication of spatial depth is different from that of illusion. The "*indication*" relies on the nature of architecture, and dependence to pictorial surroundings. "*Indication*" also confirms visual paradigm of C-P that architectural representation should be schematic and constructible according to bodily experience. On the contrary, perspective as illusion of spatial depth has rather symbolic ideas; metaphysical thinking and later contribution of descriptive geometry ensure perspective as a self-preferential system that evolves on its own behalf, while regardless of purposes of both pictorial space and visual perception.

Chapter 4 Forms of Landscape: Purposive Patterns of Depth in Chinese Landscape Painting

> The problem is to understand these strange relationships which are woven between the parts of the landscape, or between it and me as an incarnate subject, and through which an object perceived can concentrate in itself a whole scene or become the *image* of a whole segment of life.
>
> --Maurice Merleau-Ponty, *Phenomenology of Perception* (London: Routledge, 2002), p.61.

Ludwig Bachhofer makes a good choice for the title of his dissertation '*The Representation of Space in Chinese Painting during the First Thousand Years of the Christian Era*',[46] which explicitly conveys a progress in Chinese spatial composition from the Han to the early Sung. It has a commitment in realistic representation for architecture. For him, as far as Chinese visual culture is concerned, a one-thousand-year attempt to deliver a similar architectural perception in perspective is rather successful due to the maturation of draughtsmanship. Being a visual capacity, it indicates a psychological process which precedes execution; it is also a question of whether to preserve the continuity of narration in representation when selecting appropriate visual techniques like vanishing line and axis for C-P (although he doesn't mention about this keyword), or to simply spare pictorial space without an overarching visual system like perspective. In this spirit Bachhofer acknowledges two

[46] Ludwig Bachhofer, "Die Raumdarstellung in der Chinesischen Malerei des ersten Jahrtausends n. Chr.," *Munchner Jahrbuch der Bildenden Kunst 8* (1931) (hereafter Bachhofer, 1931g); translated by Harold Joachim as "Space Conceptions in Chinese Painting during the First Millenium after Christ" (unpublished manuscript, Rubel Library, Harvard University) (hereafter Bachhofer, 1931e); also translated as "The Representation of Space in Chinese Painting during the First Thousand Years of the Christian Era" (translator unknown, Bachhofer Archive, M. E. Grenander Department of Special Collections and Archive, State University of New York, Albany). This study is mainly based on the Albany collection.

features, the juxtaposing "space cells" and parallel perspective, both easily identified within Ku Kai-chih's *The Fairy of the Luo River* 洛河 and Buddhist frescos in Cave No. 70 at Dunhuang, for the purpose of realistic "*indicative*" picture in a descriptive manner. "[It is] one of the greatest artistic achievements of the Far East," as he says (Bachhofer, 1931: 45).

Whether space cell or parallel perspective, if true qualities of representing spatial depth as Bachhofer claims, this would make Chinese landscape representation extraordinary yet still worthy of inquiry. Since techniques are not expected to be an indispensible part of spatial depth, which completely deserted especially in certain landscape paintings of later periods, Bachhofer's supposition on naturalistic style for which *Jie Hua* claims its summit thus could not be simply applied to paintings of architecture and landscape in the Ming and Qing Dynasties; which are later identified as the *commentatorial* style. Basic contents of them are no longer representational form, but lateral thoughts of abstraction and self-expressionalism.

To reinterpret the abandonment of visual techniques for naturalistic representation of C-P in favour of aesthetical and connoisseur images is meant to broaden the expedition into the times of the Han Dynasty, when landscape painting has its first incarnation in the form of engravings and lacquers. On these items the dominant feature, however, is not landscape but architectural space. Landscape works firstly as addendum to architectural representation and thus shares a parallel progress. Their coincided growth has clear tracks till the late Sung. In other words, landscape representation has been engraved with a hallmark of architectural space since its very birth and remains so until a transition in pictorial ideas claims the downfall of architectural representation. The last chapter concludes the former fact; for the latter, one should rethink its origin, and see how landscape painting benefits from architectural image and finally overwhelms it.

4.1 The Meaning of Landscape Representation

Chinese visual culture is supposed to connect with philosophical thinking of image and body. Representation as such means distinct visual media and

manners and the body of it is established upon images of both architecture and landscape. As ancient images favour architectural schemes to present space, it is rather a contradictory truth that later discourse on pictorial space exists in manuscripts of landscape painting. It is in writings of landscape that appearance of body and image associates actual environment explicitly and intensively.

Around 400 A.D., Tsung Ping 宗炳 delivers a first passage in *A Preface on Landscape Painting* 画山水序. It is translated as "The sages cherish the Tao within them, while they respond to the objective world; the virtuous purify their minds, while they appreciate represented forms."[47] With it, he identifies representation or 'representational art' as a prerequisite to express experience. However Sullivan (1962: 108) examines that it seldom means a naturalistic realisation of form; because any visualised form in landscape painting should concord with the cosmic truth of *Tao,* the way of nature. Another painting theorist Jing Hao 荆浩 of Five Dynasties mentions about two faults in painting coinciding with Sullivan's idea: those that simply disregard representation and those totally dependent on it 夫病者二，一曰无形，二曰有形. He warns that a precarious treatment on representation will to the extreme destroy the spirit and harmony, even if techniques on brush and ink are perfectly activated (Wang Bomin, et al. eds., 2002: 192). But in what manner can thinking of appearance and body influence practice of landscape representation?

4.1.1 Significance of Depth for Landscape Painting

It is partly because Chinese landscape painting has since its birth been regarded as the outcome of ideology, not like images of architecture which depict the actual world. The inauguration of landscape painting coincides with a fervent discussion around the critics on threefold relation between word (*yen*, 言), image (*hsiang*, 象), and idea (*i*, 意). According to Wai-Kam Ho, a "pure" landscape painting of the Liu-Song Dynasty (420—479 A.D.) can be regarded as heavily attached to metaphysical thinking in literature with clear

[47] The Chinese text is 圣人含道映物，贤者澄怀味像 (Wang Bomin, et. al. eds., 2002: 12). The English translation is quoted from Michael Sullivan's *The Birth of Landscape Painting in China* (London: Routledge, 1962), p. 102.

impression upon inner reality and a strong will to communicate personal feeling with nature by the *Tao*. But representational intention is still unavailable unless refined by the awareness of controlled pictorial space.[48]

Architecture is always physical and objective to paint, thus readily at the command of representational intention. This means, though perhaps symbolic and abstract, architecture has definitely certain spatial occupation compatible with naturalistic description of spatial depth of C-P. Contrarily, landscape at first glance relies not on body, but on surface. Although a similar purpose induces spectators into the natural world, it resembles superficial visual impression to please the eyes, yet always without practical function. Viewers contemplate in a distance, struggling with sensuous aspects of the environment.

Landscape painting functions thus like a map which means not to eliminate Depth. On the contrary, depth is "the very first consideration in an uninhibited landscape of natural place, part of its being and essential to its representation" (Casey, 2002: 16). C-P of landscape is bound to encompass, yet suppression in its three-dimensional appearance seems to have made it incommensurable and easily overlooked. In fact, landscape painting is intended to represent nature as a place of depth; spatial depth in its nature would seldom be absent from landscape dimension. Wittgenstein believes "the depths are on the surface." In fact, two-dimensional landscape painting never abandons but recognises the depth and surface simultaneously, yet in a different way.

4.1.2 Relation between Map Making and Landscape Painting in the Early Stage

Painting landscape has a similar mechanical basis to draughtsmanship of mapping. At the early stage both are represented in line and in paint, in image and in word. Landscape derives from a simple *base line* standing for horizon of earth. When improving with *base plan* to accommodate image for spatial action (these two terms will be disclosed later in this chapter), landscape and

[48] Wai-Kam Ho, 'The Literary Concepts of "Picture-like" (Ju-hua) and "Picture-Idea" (Hua-i) in the Relationship between Poetry and Painting' in Alfreda Murck and Wen C. Fong eds., *Words and Images: Chinese Poetry, Calligraphy, and Painting* (Princeton: Princeton University Press, 1992), p. 388.

mapping are endowed with identical topographical concern. Different manners for these two kinds of representation are discernible, as philosopher Edward Casey states:

> Whereas maps orient us in the practical world, landscape paintings possess the decidedly nonpractical function of helping us to appreciate the natural world's inherent beauty and sublimity. Maps facilitate our access to the life-world of action (by literally guiding this action), whereas landscape paintings aid in contemplating the surrounding world (contemplation is itself an action, but one that lacks a practical intentionality). Paintings call mainly upon darting eye movements and slight shifts of stance, if only on the part of the viewer's imaginative body – in contradistinction to maps, which project and often induce the movement of their user's actual body (Casey, 2002: xiv).

C-P of the Chinese landscape representation always promotes realism as well. In this spirit, landscape is not totally antithetical to mapping, which is measurable and descriptive; it is just as Kant (1952: 107) says, "... measurement of a space (as apprehension) is at the same time a description of it." Accordingly, especially in the early stage, principles of descriptive representation for the bounded mapping may equally be applied to landscape illustration. This tradition fits Chinese counterparts as well. After Chinese landscape representation finds *divergence of direction* an effective way to render narration of space, it coincides with the first giant gallop in map-making by the end of the Han Dynasty. P'ei Hsiu 裴秀, an ancient Chinese cartographer of that time, concludes six advanced principles of cartography.[49] He makes use of a grid system, which formally resembles J. J. Gibson's quadrilateral division of earth (discussed in Chapter 5), also projected by parallels and meridians to make sure illustration of dimensions is compatible with the aggregation of a fixed unit that stands for an actual distance.

[49] The whole system of criteria is translated by Sullivan in *The Birth of Landscape Painting in China* as: a kind of grid system by which the dimensions of a given area could be set out; exact orientation and interrelationship of the parts; fixed and accurate distance; indications of heights and depressions; right and oblique angles; crooked and straight (分率，准望，道里，高下，方邪，迂直).

Alexander Soper (1941: 149) even believes those primitive maps of mountains and rivers of the Han Dynasty might have ever been illustrated in an approximate manner of landscape in order to represent topographical panorama. However, as both are still under development and rather unsettled in both techniques and styles of C-P, it may be too bold to ascertain a mutual influence between map-making and landscape painting by that time. It is thus better to examine which visual techniques are the favourite for early landscape representation.

4.2 Chinese Early Visual Representation of Landscape

4.2.1 Directional Discernment and the Primitive Landscape Representation

Michael Sullivan (1962: 164) traces the birth of Chinese landscape representation up to the 18th century B.C., yet he also confirms landscape painting appears not to be pictorial space until the Han. He believes that landscape has not yet been fully appreciated until space comes to be an indispensible topic of representation. Many signs for such progress can be found in Han illustrative arts (Soper, 1944: 146). Till the late 2nd century A.D., three-dimensionality is still beyond the reach. Representation of space is compensated by images of plan and elevation in the form of base line. Correlated sense of environment seldom exists. Neither diminution nor successive plane has been used as techniques of C-P to define representation of depth. Trajectory has then changed by the early 3rd century A.D., when base line is replaced by a new style of base plane. Horizontal ground seems to be tilted up towards the spectator (Bachhofer, 1947: 92). This important shift, as Bachhofer notices, is of a gradual progress, whose motive is shown on the images of Yang-tzu-shan pottery.

Figure 4-1 Shooting birds on a lakeshore, and harvesting. Molded pottery tile Yang-tzu-shan, Sichuan. Han Dynasty. Chengdu

Figure 4-2 The Salt Industry of Tseliutsing

On a molded pottery tile excavated from a tomb at Yang-tzu-shan, Sichuan [Figure 4-1], Sullivan identifies several men harvesting in the rice field while two hunters standing in front of two trees are shooting at birds by the lake. The

pottery depicts with an obvious horizontal line as demarcation. It can be easily judged by images of rice field and lake nearby, showing different plantations. However, there is no intention to divide the lake from the sky. As Sullivan claims horizon seems to disappear in the mist. The whole composition demonstrates a struggle of Chinese artists to conquer landscape representation with a spatial sense, although they still suffer a lot for their incompetence. The very situation leaves them no choice but ironically omit part of the landscape (Sullivan, 1999: 77-78). Omission is traditionally a compromise for alternation. Such similar purposive deletion also appears in the architectural representation of *Cause of Sumati Lady* in No. 257 Cave (see Figure 3-14), in which a decorative corner of dragon tail keeps missing for a compromised integrity of spatial depth. It shows again that representation of landscape and architecture may share pictorial ideas and techniques of treatment in the early stage.

Another rubbing from the same tomb is much more complicated in its spatial representation [Figure 4-2]. This image depicts a working scene of the salt industry at Tseliutsing. A wooden structure of a drill is located by the left corner on the tile, with a drainage directing to the kiln on the right corner. Quite a few details of landscape are presented with the overlapping contours of hills, while a thin line arises up from the right corner to the upper middle ground. This line probably depicts a road extending in the valley because it suddenly disappears where it 'touches' outlines of hillsides afar covered with rows of trees. The two artefacts aforementioned ideally explain the naturalistic impression of the Han images; it appears to be a threshold for landscape to be involved as compositional in pictorial space. However during that time, visual arts like engravings in the Wu Liang shrine 武梁殿 and wall paintings in the Liao Yang tomb,[50] is supposed to present either Confucius' ideas or historical events. Landscape does register here, but keeps subordinated as complementary decoration to envisage settings of human and animal figures which usually associate with ferocious actions in the picture.

However coarse landscape it has, spatial perception strives as soon as a basic discernment of variable directions comes into being. Direction is a critical

[50] For a detailed description, see Laurence Sickman and Alexander Soper's *The Art and Architecture of China* (Harmondsworth: Penguin Books, 1960), pp. 32-33.

technique in C-P for a two-dimensional plane to indicate the extension of space. Object identifies architectural senses when it has purposive dimensions. In so doing, an extreme contrast in directions, in Gustaf Britsch's point of view, will be the simplest and clearest way to differentiate horizontality from verticality; because they are of critical significance to mentally present senses of locality in space. It is called '*Directional Discernment.*'[51] In this spirit, a simplified application of foreshortening of C-P to early-stage ancient arts (for landscape and also architecture) might not be so accurate as supposed, since a gradual change in formal sizes is probably not the consequence of "three-dimensionality", but that of *indication of direction* which outlines an occupied space subject to a primitive figure-ground relationship.

The landscape painted on the *Shooting-Birds* pottery relief, images for the hunters placed in the upper position and the rice reapers in the lower both indicate a sense of directional extension. The whole composition stands for a base plane for the pictorial scene which has far more realistic effect than a base line. Meanwhile, the line demarcating rice field and lake has no intention to provide spatial senses of 'far' and 'near', but rather to describe a directional connection between them: a simple fact that the field is closed to the lake. And for the same reason, there is no need to add a line to divide water from sky, or to cover them up with mist; for one who counts on daily experience should have no difficulty to notice that they never bump into each other visually. The second relief can be elaborated in the same way. If leaving aside the question of spatial recession, the starting and ending points of the line give it a sense of direction; at least it shows an extension from hill foot to the top. Without these points, this line seeming-to-be-the-road should have only been regarded as unnecessary to spatial compartment, if comparing with contours of the hills.

Following this insight, Bachhofer who regularly attended Britsch's lectures, is deeply influenced by his theory of "*divergence of directions*," and identifies the development of early Chinese pictorial space by three collective stages, the first of which lasts to the 3rd century A.D. and shows *divergence of directions* as its main compositional method of C-P to combine plan and elevation on a

[51] For Gustaf Britsch's discovery of the contribution of direction to pictorial space, see Andersen, W. V., 'A Neglected Theory of Art History' in *The Journal of Aesthetics and Art Criticism*, Vol. 20, No. 4 (Summer, 1962), pp. 389-404.

single plane.[52] Bachhofer's understanding is not impeccable especially for later periods; yet what he mentions about the primitive application of directional discernment may be appropriate for artistic representation of space in the early stage. He is insightful to claim that a simplest spatial sense of C-P follows a thorough contrast between horizontal and vertical extensions. And moreover, derivations from this prototype of visual contrast in later periods announce advanced requests to conquer pictorial space.

4.2.2 Space Cell as Compartmental Enclosure of Landscape in the Early Stage

Compartmentalised composition of C-P, the 'space-cell' as most art historians in the 20th century would call it, traces its origin back to the 'cloud-scroll 云纹 ' of the late Zhou (around the 3rd century B.C.), which is an iconographical image of mountain. Later, this wavy pattern of cloud transforms. As the line weaves back and forth, contours of hills are marked out and pictorial space divided into several visual zones, which have smaller occupation on image and become more controllable for detailed representation. This technique has become quite obvious in the *salt industry* scene in the Yang-tzu-shan rubbing [Figure 4-2].

On a brick rubbing from a relief of the late Han Dynasty, Honan province [Figure 4-3], a story of *Shan-hai ching* 山海经 might be illustrated here by configuration of human figures and legendary creatures. Mass depiction of mountains overlaps, sloping down from left to right to make a pyramidal formation. As can be easily identified, the overall representation of environment is divided into pieces of 'space cells' by outlines of overlapping mountain figures. In some of these cells, humans riding horses and cargos are chasing animals down to the hill. The gesture of their identical movement clearly provides a sense of defined direction downwards, contrasting that of the creatures climbing upwards. The composition also shows a definite feature of diagonal placement which, as already disclosed, means a variation of

[52] Lillian Lan-ying Tseng, pp.516-20. Bachhofer's conclusion of three-stage early Chinese pictorial space includes as: divergence of directions, parallel perspective (3rd to 6th century A.D.), and vanishing-axis perspective (6th to 10th century A.D.).

directions. But for this time it is fulfilled by neither horizontal nor vertical ones. Wen C. Fong (2003: 272) believes that diagonal line is a primordial discovery in pictorial composition to position figures as parallelograms that may potentially indicate spatial recession. *Shan-hai ching* has so advanced a pictorial development for that time that Sullivan thinks this rubbing might have a later birth. Nevertheless, from a technical view of C-P, treatments in this rubbing confirm a fact that traditional compartmental style is weakening.

Figure 4-3 Molded brick with scenes in relief, Honan region (Sullivan, 1962, pl.80).

4.2.2.1 Space Cell and the Continuous Narration

Figure 4-4 The Nymph of the Lo River, Hand-scrolls, ink on silk. Freer Gallery of Art, Washington (Sickman and Soper, 1960)

Tradition of space cell for continuous narration of C-P would lead readers once again to the works of Ku Kai-chih of Six Dynasties. Laurence Sickman explains that Ku is the only painter of that time who possibly provides some "timid conjectures" for landscape painting to go beyond the threshold of its formal birth. It is rather more interesting that as his foremost influential works of two scroll paintings actually demonstrate strikingly different archaic spatial schemes.

The first one that names *Admonitions of the Instructress to the Palace Ladies* 女史箴图 [Figure 3-14] has been examined in the last chapter as of realistic description of interior furniture and human figures. Space cells perfectly illustrate narration without any background setting; lateral connection between images may only be found in the attached passages of explanatory writing. On the contrary, spatial representation in the second scroll, *The Nymph of the Lo River* 洛神赋 [Figure 4-4], is greatly enhanced by a continuous composition of

setting to embrace human actions. It seems that C-P has a new technique, called "*continuous narrative;*" for which is not a simple story-telling sequence in favour of fluency, but commands the reappearance of particular human figure in different places (Sickman and Soper, 1960: 63; Sullivan, 1999: 97). Landscape in *Nymph* appears still archaic yet integrate, establishing foreground enclosure. Stylistic trees and rocks seal up areas in which often a gentleman seats in a space cell which separates the main scene from the water on the right and the rocky landscape on the left. Images of the gentleman and his servants have compatible scale to those of trees and rocks by which correlating spatial grouping is achieved. The archaic landscape of *Nymph* is less advanced in techniques of C-P if comparing with the mountains in *Admonition*; yet it is truly a great achievement, not for its technique, but by the style of landscape emerging as independent subject for representation. Landscape formally separated is actually coherent here in atmosphere; and this typical feature of C-P in early landscape art begins to flourish. In this sense, it is not surprising to know that Bachhofer (1931: 23) takes *Nymph* as the first landscape painting with an orthodox sense of space.

If taking *Nymph* as the beginning of space cell for continuous narration, it then at the same time surrenders its deficiency in confining 'depth.' We can make a comparison between it and the background to filial piety scenes on the sarcophagus of 6th century A.D. in the Nelson Gallery [Figure 4-5]. It is an undeniable accomplishment of landscape engraving on stone by that time. The spatial composition of this sarcophagus is identical to that of *Nymph*, however with more complicate treatments to the foreground, blocking scenes off from the background. Space cells contribute isolated scenes in *Nymph*, but between bodies of human figures and landscape exists no iconographical relation, as they keep always separated in a manner of juxtaposition of C-P. In this sense, it is not much more advanced than *Shan-hai ching*'s rubbing [Figure 4-3]. Nelson's sarcophagus denies this idea by its carefully constructed space cells. Trees in the foreground realistically overlap rocky mountains in the middle field; and altogether they are not simply to disconnect scenes of the story, but to stand upright as the 'amphitheatre,' holding human figures and their actions, indicating their locations within or in front of the mountains. Judging

by *divergence of direction*, profiles of mountain tops indicate here a strong style of "perpendicular direction", meanwhile sloping towards the left side.

Notice an interesting aspect in part of the sarcophagus, *Filial Tung Yung*. Here, rocks are meant to not only compartmentalise space cells, but also block the penetrating view of spectators into the background. Mountains suddenly appear, leaving transition half done between the foreground and the middle ground. By contrast, another scene on the same sarcophagus named *Filial Grandson Yuan Ku* does illustrate a row of far hills as the background, while transitions in-between flourish by waving lines of cloud. Consequently, it is reasonable to believe the blockages seen in *Filial Tung Yung* have a purposive pattern of C-P in their technique of representation. Sullivan (1962: 159-60) claims that blockages in the middle space with mountains are results of careful deployment of stories to be presented here. Viewers have to lead their eyes over the blockages to distant hills of ringing clouds to deliver landscape with more grandeur. If not, a focus on a story-telling scene in the middle ground is quite enough. Such a pattern of blockage works so effective that it dominates long in Chinese visual culture. Further achievement in techniques of C-P remains silence till the first century of the Tang Dynasty (Sullivan, 1962: 162).

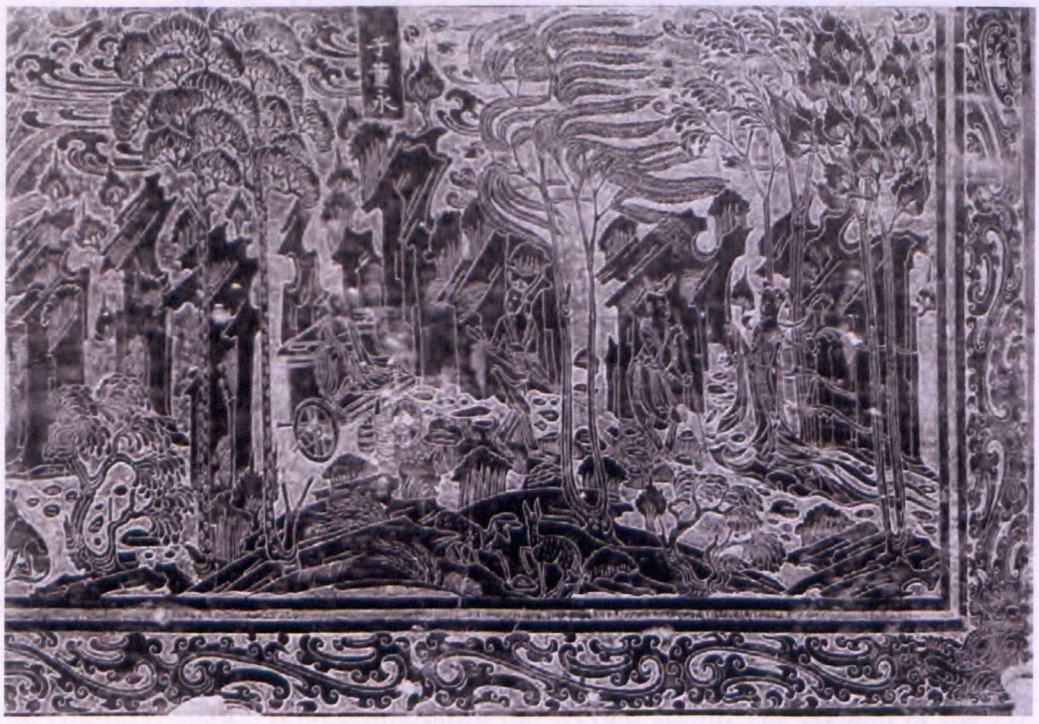

Figure 4-5 Detail of an engraved stone sarcophagus. c. A.D. 525. Nelson Gallery of Art, Kansas City (Sickman and Soper, 1960)

4.2.2.2 The Dissolution of Space Cell in Buddhist Fresco of Dunhuang

Space cell is the prevailing feature of early-stage frescos in Dunhuang. Its dominance lasts for more than five hundred years, from the very beginning of the Dunhuang Caves around the 4th century A.D. to the late 8th century A.D. of the High Tang period. A further conquer of spatial depth must be an extraordinarily difficult one; for many noticeable attempts by new technical devices to control pictorial space in frescos turn out to be useless. Sometimes they even bring about chaos in composition, with inconsistent dimensions and unqualified directions. Under this circumstance, space cell remains still a trustable technique of C-P to illustrate moderate breadth and depth in isolated scenes, and keep human figures and animals compatible with landscape in a temporary balance. By the early 8th century, frescos have succeeded by means of much delicate yet limited spatial depth in the images of halls, pavilions, courtyards and hill landscape; and space is still an unoccupied area that congregates small to the whole and struggles among solid bodies. Failure in landscape as constituent parts indicates that "early landscapes were not conceived as entities" (Bachhofer, 1931: 41). However, space cell becomes incomparably effective due to the situation that figures now have convincing correlation in proportion, for both architecture and landscape.

Frescos of the Northern Zhou (557 to 580 A.D.) flourish with richer contents and details than their precedents. Space cell endows images with the ability to accommodate different historical events in a single representation in a way of "making room for the Buddhist figures who are foregrounded" (Duan Wenjie & Chung Tan, 1994: 68-70). With no clear inclination to make space extend in a vertical direction, those frescos secure a procedure that observers can do nothing but scan and read landscape in a horizontal way, just as that in Ku Kai-chih's *Nymph*.

Figure 4-6 Detail of Hunting. Cave No. 294. North Zhou

The hunting scene in Cave No. 294 [Figure 4-6] demonstrates the hunters are riding horses and shooting at running deers. Landscape provides a foreground to mark out lower outlines. Compartmentalisation is dependent not on contours of landscape as ever before, but on profiles of animals which provide lively changes in space cell. Overall, the techniques of this fresco are not as comprehensive as that of the Nelson sarcophagus. The narration of the story of hunting relies on a horizontal reading process extending along landscape. It is worthy to notice that those overlapping mountains are painted in different colours and styles: some are painted with a single colour; others are textured; only the area behind outlines of mountains is decorated with trees. It probably indicates a difficulty in harmonising complex forms like trees with simplified profiles of mountains. The omission of inner plantation responds again the similar style of juxtaposition in landscape on the stone rubbing of *The Salt Industry of Tseliutsing* [Figure 4-2], and also the missing dragon tails in *Cause of Sumati Lady* [Figure 2-14].

Figure 4-7 Cave No. 290. Northen Zhou

Figure 4-8 Cave No. 135 Jataka, Northern Zhou

Figure 4-9 Cave No. 423. Sui Dynasty (Xiao Mo, 2002)

Another example in Cave No. 290 of the same period claims different spatial composition [Figure 4-7]: the foreground is not dominated by landscape, but by figures of Buddha and architectural structures. As already discussed, representations of this period prefer to render architectural space with three-

dimensionality. Architecture extends clearly in two perpendicular directions, holding figures inside and abruptly interfering with horizontality by means of divisions of courtyards. Landscape is accordingly subordinated in role of compartmentalisation and becomes additional decoration around buildings. It provides no spatial sense, but instead indicates consistence in scale which contributes the realistic purpose in representation. A mixture of these two styles of compartmentalisation can be exemplified by *Jataka* in Cave No. 135 [Figure 4-8]. However, a religious transformation of bian may be unlikely to explain the horizontal narration to Buddhist stories as an ordinary piece of iconography. Further examination on its latent significance is exemplified by the study of Eugene Y. Wang. It functions more than vision, as Chapter 5 will later disclose, to envisage the incarnation of Buddha with a practical purpose to encourage monks 'reading' during rituals and ceremonies.

Horizontal placement of series of space cells continues up to the mid-Tang. Later, compartmentalisation of C-P as such has transformed since the late 6th century A.D. when, as seen in the fresco of Cave No. 423 of the Sui Dynasty [Figure 4-9], a simple horizontal narration is apparently insufficient. With the help of zigzag formations of architecture and penetrable profiles of landscape, space cells may no longer be confined as horizontal and vertical but rather unleashed in all directions, spreading all over the surface of representation. Although compartmentalised scenes still juxtapose, they belong to different Buddhist stories sometimes; which means continuous narration is missing.

Such divisions are imperfect by its techniques of C-P. Background of one scene always extends into others, interconnecting representational space in a chaotic order. But architecture has dual meanings, not just to circumscribe. Human figures interact perfectly with architecture in a way to sit in or walk through it, and the body of a single structure may be shared spatially by two or more scenes around it. For example, a Buddha sits in a temple, the enclosing walls of which may simultaneously become a background for another adjacent Buddha processing religious ceremony. Possibility is that a certain protagonist in one story could reappear in another, connecting different scenes not by formal appearances but by identical contents. As a whole a story can be

implied by a single grandeur landscape painting (Wang Bomin, 2000: 241). With demarcation disappearing, space cell loses pictorial supremacy.

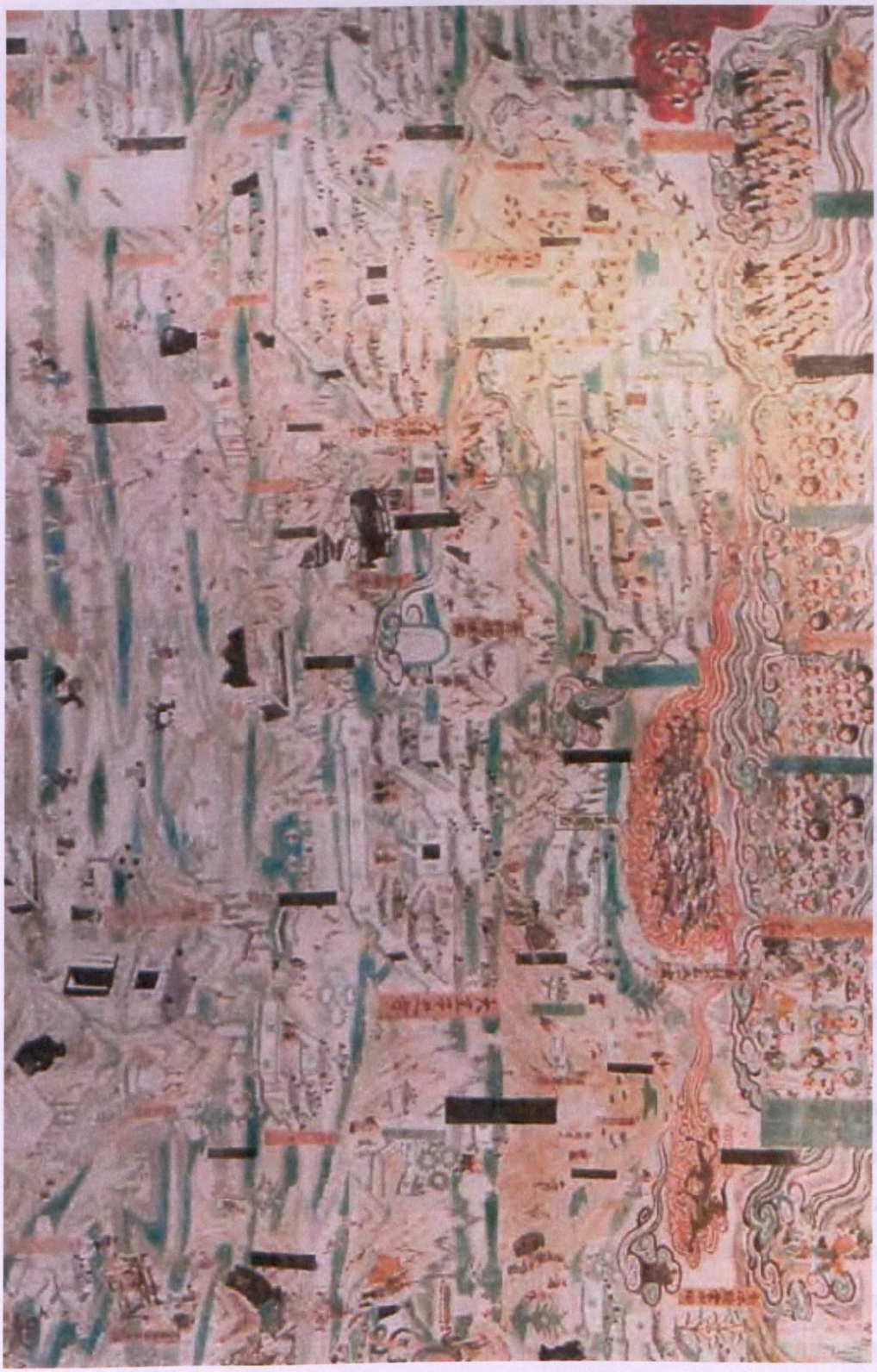

Figure 4-10 Wu Tai Shan Mountain, Cave No. 61. Five Dynasties. Part 1

Figure 4-11 Wu Tai Shan Mountain, Cave No. 61. Five Dynasties. Part 2

Spatial dissolution *per se* arrives at the summit around the 10th century A.D., as shown by the landscape in Cave No. 61 which basically maps landscape of *Wu Tai Shan* Mountain 五台山 [Figure 4-10 and Figure 4-11]. Large number of monasteries and shrines are carefully depicted according to actual locations. Landscape as a whole composition no longer aggregates space cells. Nor is it a leftover between solid bodies. In Bachhofer's point of view, space shall be conceived as infinite from now on, indivisible and all-encompassing, and "the elements of a landscape no longer build space, but exist in space" (Bachhofer, 1947: 107).

The map of *Wu Tai Shan* Mountain gains more independence in the history of landscape painting, not only because it is the largest landscape painting in the one-thousand-year history of the Dunhuang fresco, but also due to a clear technique of C-P to integrate story-telling scenes with realistic background of environment. Before the dawn for this technique, management of the background of symbolic landscape must follow requirements of Buddhist stories and imaginative thinking. Now, with all real landmarks distributed in a truly geographic way, the actual environment reclaims supremacy over artistic representation. *Wu Tai Shan* as a matter of fact inclines to depict all the topographical details as faithfully as possible. As landscape of thousand miles is transformed onto the surface of cave walls, horizontal narration as the traditional manner of C-P no longer suffices realistic depiction of space spreading in all directions. *Wu Tai Shan* incorporating all directions actually creates a 'free-will' style for Chinese landscape painting (Duan Wenjie and Chung Tan, 1994: 217). The new device supplements C-P with a unique purpose: a unified space, impossible to set apart from the actual nature.

Bachhofer observes an upgrade from another case in Cave No. 120 that visual direction for reading the story of *Ajatasatru* has already changed. That means the narrow panels of fresco should be regarded as self-completed images with consistent pictorial space. Space cell completely disappears. For Bachhofer (1931: 75), when space cell becomes inappropriate, new techniques of C-P, for instance the vanishing line system and parallel perspective as he refers to them, take place to unify the space. This point of view has numerous followers who support a plausible mechanism of pseudo-perspective. However, a discreet observation may forbid us to jump too far. Yet it is admittedly during pre-Tang periods, as later Buddhist representations of architecture disclose in the last chapter, that a definite transgression from *divergence of direction* to three-dimensionality of space coincides with the dissolution of space cell and a desire to find new techniques of C-P as replacement.

4.2.2.3 Realism and the Recession of Compartmentalised Space

Realism in landscape painting is not a new scheme. Since its birth within architectural representation, landscape has already endowed pictorial space to occupy and locate. Architectural images of the Han have already indicated spatial depth with a successful realism; so the landscape in *Wu Tai Shan* is perhaps a transitional application of realism from architecture to landscape. Representation of the High Tang faithfully presenting nature exists in Dunhuang Caves, among which a fresco depicting farmers seeding crops in the field can be regarded as a scene taken from everyday life [Figure 4-12].

Figure 4-12 Seeding Crops in the Rain. Cave No. 23. High Tang

In part of it, rain drops fall down to the farmland, and cloud is painted with stylistic textures of wrinkles. To juxtapose secular and religious schemes becomes customary treatment, which shows intensified social influence upon Dunhuang frescos. Other popular schemes include politicians communicating between countries, merchants transporting and selling goods, and military troops marching to the battlefield. Undoubtedly, techniques of C-P that are once skilfully facilitated in the *Wu Tai Shan* map now appear ineffaceable to distribute superfluous scenes of social events in such a grand scale.

Farmer seeding crops still bears a routine manner of *divergence of directions* to display elements within a plan. No clear attempt defines near vs. far. But if comparing it with images of the landscape in Cave No. 159 of the same period [Figure 4-13], one is suddenly shocked by a floating sense of spatial depth on the surface of the latter. A dominating figure of Buddha is reciting sutra and sitting in the foreground. A vague horizon arises in the up-left corner. Between them inserts a creek, which indicates apparent recession and a sense to occupy space. In the discussion of Zhang Zeduan's *qing ming* scroll of the Sung Dynasty, indication of spatial depth is explained as a twofold signifier. The fresco in Cave No. 159 is rather more ancient than the *qing ming* scroll, yet its image of the creek implies the same pattern. It extends diagonally in a zigzag manner which visually cooperates with *divergence of direction*. Decoration of

grass and trees along the river bank echoes weaving lines of water, and thus announces the image as a faithful depiction.

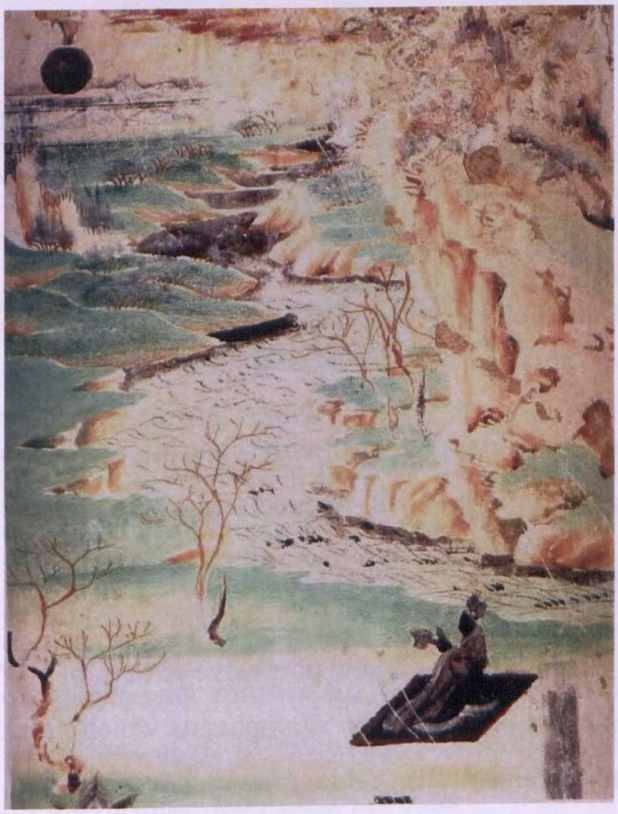

Figure 4-13 Cave No. 159. Mid Tang

So the fresco in Cave No. 159 can be taken as a primordial example of C-P to integrate divergence of direction with the intention to *indicate* spatial depth. A stronger sense of space is accordingly forged and results in a fundamental change to spatial perception. The creek with iconographical recession dominates extension over the entire pictorial area. If such kind of recession only appears once in certain compartmentalised spatial cells, now it becomes an overarching scheme for pictorial space as a whole. Landscape as such has numerous descendants in later Sung paintings.

As soon as the artists realise this achievement, they begin to conceive how to use it once again for a symbolic purpose, while maintaining certain level of unification of spatial depth. Technique of diagonal composition is efficient to apply; yet multiple of it is not always leading to a fluency in spatial recession. Space cell interferes and the situation must be changed. A fresco of the mid-Tang (762-827 A.D.) in Cave No. 172 [Figure 4-14] explores possibility in a way to divide landscape that once extends consistently into three basic planes.

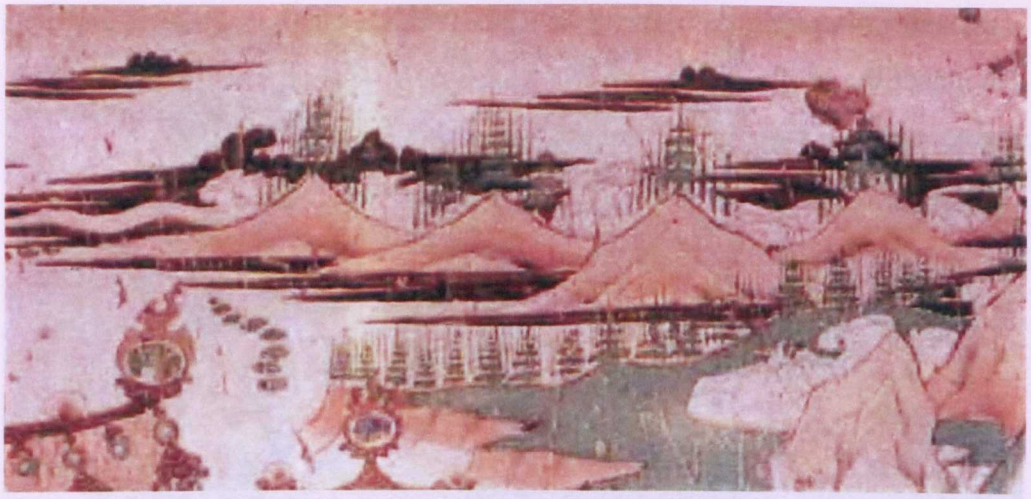

Figure 4-14 Cave No. 172. High Tang

In each of planes the technique of overlapping explicitly controls but limits spatial succession. As superposition of C-P is fully appreciated as a technique of spatial depth during the Han, it would be inappropriate to take the discontinuity between these three planes as a sign of incapability or degeneration of skills. In fact, it is probably of a new purposive pattern of C-P as well, rather than repeating manners of the Nelson sarcophagus which block spatial penetration with abrupt mountains in the middle ground.[53]

Wen C. Fong discovers in a large amount of artistic representations between 700 and 1050 A.D. a spatial progress typically of three separate stages. They distribute from front to back, the manner of which is called by Wen as 'overlapping triangles':

> ... [while] overlapping triangular mountain motifs suggest diagonal recession, each sequence of mountains is limited to three or four steps; then the chain breaks off, jumps to a higher level in the picture plane, and starts again. The treatment of space is thus compartmentalized: foreground, middle ground, and far distance

[53] It is true that in the section *Filial Grandson Yuan Ku,* the representation has shown a traceable far hill beyond the blockage. Yet the image is too primitive and simple, unconnected both in iconographical and symbolical aspects with the remaining landscape. It is better to consider this image as important as that in Cave No. 159. Besides, a similar point of view which is actually inaccurate can be found in Alexander C. Soper's survey on a Japanese copy of the illustration *Buddhist Sutra of Rewards and Punishments, Ingakyo.* He believes it attributes to earlier Chinese origin around the 6th century A.D. There is a similar omission of visualisation between grouped landscapes; however in it Soper finds a memorable view in which a far hill emerges above the clouded horizon. It is, as Soper claims, the first "far distance" that it has ever been identified with (Soper, 1941: 157-58).

occupy three separate levels in the picture plane, each with its own angle of recession (Fong, et. al 1984: 20).

Fong even acknowledges the technique of overlapping triangles as a first compositional discovery to indicate recession. The three separated grounds tilt up and recede away from the viewer in distinctive angles. They normally mirror in direction which contributes the zigzag formation of the creek in the landscape of Cave No. 172. As the image in Cave No. 159 demonstrates, in the foreground decorated with rows of trees, the water bank extends basically from left to right; then the ground suddenly splits where triangular profiles of mountains in the middle ground have barely little connection between their frontal profiles and the foreground. In the middle ground, diagonal extension of the water bank leads landscape from lower right to upper left. Here once again, it is divided by vast blank from the profile-style far hills painted in monochrome. They overlap triangular profiles as well; and their composition of overlapping mirrors the direction of the former group. Yet, the zigzag formations of both frescos have different representatives: an extending river for the former, water bank the latter.

Buddhist frescos in the Dunhuang Caves perfectly demonstrate a vicissitude, shifting from its beginning to spot space cell, and finally to its dissolution. A three-stage composition by a zigzag formation comes about. As new spiritual resources enhance its content, more advanced visual synthesis is under discovery to present and re-define the unified spatial continuum.

4.3 The Last Call of Naturalistic Representation up to the Northern Sung

4.3.1 Dual Recession and the Naturalistic Scenery of the Tang

Landscape painting of realism of C-P rather diversifies during the Tang Dynasty. Tung Chi-chang 董其昌, a most famous landscape painter of the late Ming, regards Li Ssu-hsun 李思训 (normally announced as the *Two Li*, co-placed with his son Li Chao-tao 李昭道 for their parallel achievement) and Wang Wei 王维 as two prestigious leaders for landscape painting. Chang Yen-

yuan 张彦远 also attributes Li Ssu-hsun as a key figure for transformation of landscape painting, altogether with another painter Wu Tao-tzu 吴道子 who is highly regarded by his line drawings. Both contribute to representational advancement in techniques and manners of expression.

Figure 4-15 Anon: The Emperor Ming-huang's Journey to Shu. Possibly a Sung copy in the Tang courtly style. National Palace Museum, Taipei (Sullivan, 1979)

Chu Ching-hsuan 朱景玄 in *Famous Paintings of Tang Dynasty* 唐朝名画 places Li Ssu-hsun as the best of Tang landscape painters, classifing his works to the level of *shen pin* (神品, with immortal quality). In this document Chu tells a story that Ming-huang emperor once requires Li to paint walls and screens in Da-tung palace. During the night, when the emperor appreciates the screen, he could even hear the sound of floating water coming from the painting. Chang Yen-yuan comments on Li's painting as: "His brush style had an intense forcefulness. His rapids really did seem to be running water; his clouds and vapours added a hazy uncertainty 笔格遒劲, 湍濑潺湲, 云霞缥渺 ."[54] It is better to see one example as such to demonstrate how Li transforms natural landscape with "immortal quality."

[54] Wang Bomin, et al., eds., 2002, p. 179. The English translation is quoted from Michael Sullivan, *Symbols of Eternity* (Oxford: Oxford University Press, 1979), p.44.

In this Sung copy [Figure 4-15], a clear sense of tumultuous and serene composition benefits from conglomeration of rugged and gorgeous boulders, streams rushing down to the valley, and uneasy profiles of mountains partially covered by cloud. The formation of this painting perfectly echoes its name *The Emperor Ming-huang's Journey to Shu*, which indicates a story that Ming-huang emperor flees away from war into remote districts. Traditions of C-P like continuous narration are well preserved, as well as zigzag extension in the right part where ladies and servants are riding horses from behind the mountain to the foreground. Marching troops extend horizontally along with foreground scenes where humble servants rest under the trees. Here images of central mountains become a firm background to hold all the actions in the way like that of the Nelson sarcophagus. Levels of far mountains reveal a sense of spatial recession. Point is, when moving to the left side, the linear procession retreats into distance once again by overlapping diagonals: thus this representation indicates two diagonal recessions. It seems like a play of in and out; and the two directions of recession contribute to a marvellous visual effect of three-dimensional space. Central mountains appear to be perfectly rounded up; and for this time, it is not in a manner that landscape surrounds human figures, but on the contrary horsemen riding in a quadrilateral route encircle central mountains to provide an effect of foreshortening on both sides. The realistic style of this landscapist reflects improvement of visual technique of C-P of the Tang, which coincides with those of *sutra transformation of west paradise* 西方净土变 in the Dunhuang Caves.

Sullivan (1979: 45) feels nothing of forcefulness and hazy uncertainty in this painting. *Ming-huang's Journey* must be one of greatest achievements of C-P in spatial recession of that time. Interlocking mountains show rich complexity of forces, incomparable to any known landscape paintings. For Sullivan the incomprehensive force is in fact not an accidental thought to realise spirit resonance. Since immediately after Tang, a painting theorist Jing Hao 荆浩 has made it as one of the six requisites for painting. In *Records of Brush-work* 笔法, Jing Hao tells a story of an old sage who teaches him of six essentials in painting: *ch'i* (气, spiritual and breath force), *yun* (韵, resonance), *ssu* (思, thought), *ching* (景, effect of scenery), *pi* (笔, brush), and *mo* (墨, ink). Wen

C. Fong (1992: 77) translates the text as "[t]he emblems of the mountains and the rivers ... are mutually generative, their breath forces causing each other to grow." To catch the breath force, one must be able to feel the generating and regenerating process of forms and forces, and further by means of selection and elimination, to re-combine and re-present the completeness and harmony of nature. Sullivan has enough reason to find in *Ming-huang's Journey* generating forces perfectly represented by uneasy profiles of mountains. Another key technique of C-P to organize landscape painting appears here as well. When Jing Hao speaks of spatial recession in *Essay of Landscape Painting* 画山水, he believes that mountains have hierarchical importance in vision: "Mountains should be divided as host and guest ... the formation of mountains requires to know their directions ... as they are winding back and forth ... [while] the stone has three faces and the road is viewed from both sides."[55] In *Ming-huang's Journey*, a host mountain dominates at its central position and by explicit textures. Besides, the surrounding quadrilateral route of horsemen further enhances the host mountain as the dual recessions indicate two side-faces of it. In so doing, formation of central mountains protrudes as a semicircle.

All of these techniques of C-P are of purposive pattern and practical usage. When central mountains cover up like a fence and 'forbid' all actions beyond, a larger space is created behind it, filled with clouds and impenetrable valleys between the middle and far grounds. This manner echoes what George Rowley (1947: 66) concludes that when painters of the Tang confront with a problem of spatial depth, they prefer to indicate unlimited space in a way much like stepping into the open door, and the principle of moving focus would lead the eyes through landscape. Sullivan appraises these techniques as better ways of transformation from natural landscape into visualisation of thought, which demand the landscapist distil and discover the essence of nature. Once it is completely achieved, a "gradual retreat from realism" in Chinese landscape painting follows. In this sense, Jing Hao gives out the first shout of symbolism in landscape painting. He emphasises for the first time on *pi*, the brush in the

[55] The Chinese text is quoted as "山立宾主 ... 布山形, 取峦向 ...山知曲折 ...石分三面, 路看两歧." (Wang Bomin, et al., eds., 2002: 196) English translation is done by the author of this thesis.

form of *ts'un* (皴, a series of tiny dots of ink to provide different senses of texture), rather than forms of lines. The application of this kind of texture is highly regarded by Qian Zhengkun (1988: 85) as a remark for a mature landscape painting.

Three basic schemata are supposed to be used in the configuration of mountain landscape since the mid-T'ang: a landscape dominated by central vertical components, a panoramic view composed of horizontal scenes, and a composition with the two (Fong, 1992: 85-86). Basically these schemata still treat form of space by means of aggregation and compartmentalisation of C-P. Spatial depth becomes rather more complicated and intertwining as noticed in early-Sung paintings and treatises. The most important examples of this representation exist in Kuo Hsi 郭熙's *Early Spring* (1072 A.D.) and his famous text *The Lofty Ambition in Forests and Streams* 林泉高致.

4.3.2 Naturalism in Kuo Hsi's "Three-distance" of the Sung

Kuo Hsi makes prestigious announcement to visual techniques of C-P that how a decent painter should treat three different distances in representation as clear as possible: a scene controlled by tall vertical peaks provides a 'high-distance' view; a panorama that is representing the progress from the front to the back of the mountain stands for a 'deep-distance'; and a giant leap of the perception from the foreground mountain to the one that is far away indicates a 'level-distance' view.[56] The original text is rather clear in defining high-distance, yet still suffers a lot in level- and deep-distance. The high-distance mountain image is believed to be a symbolic emphasis on the moral authority of the scholar elites of Northern Sung in the demand of Neo-Confucianism. In this visual 'trinity' it is the easiest to be identified with by the height of image of mountain, clear and simple. However, Wen Fong (1999: 12) translates the 'level-distance' as "a panorama filled by a series of horizontal elements," and the 'deep-distance' view as a composition that combines both level- and high-distance. In this spirit, 'three-distances' seems to perfectly echo Fong's analysis on the three basic schemata aforementioned. However, his translation

[56] The Chinese text is quoted as "山有三：自山下而仰山，之高；自山前而窥山后，之深；自近山而望远山，之平" (Wang Bomin, et al., 2002: 298).

might be inaccurate; so let us re-examine Kuo Hsi's own text. Just before the sayings of 'three-distances', Kuo Hsi warns in advance about circumstances when no clear distances are seen: "it will be shallow if without deep-distance, near if no level-distance, and low if no high-distance 无深远则浅, 无平远则近, 无高远则下." Literally, it is impossible for deep-distance to combine the other two to forbid a shallow vision; due to that high-distance is not a matter of depth but that of height. And also, if level-distance is in charge of near and far, then it cannot be involved within a horizontal deployment of scenes; because, based on the principle of *divergence of directions*, a continuous narration that parallels the viewing plane of spectators is expected to maintain a horizontal panorama, as Wen Fong calls it, but definitely contrast the extension of spatial depth, as Kuo Hsi explains. The only solution for spatial depth in level-distance is to make it a vertical composition of scenes.

Again, what do level- and deep-distance really mean? Kuo Hsi indicates deep-distance with a station point where viewers standing in front of the mountain can poetically grasp the scenes from its back-side. The idea is clear: to perceive a single mountain (and probably it is a host mountain as such) from both the front and back. The two juxtaposing visions ensure the host mountain of firm spatial occupation. It is nothing else but the 'thickness' or volume of the mountain. By contrast, level-distance for Kuo Hsi is a jumping span in vision from the foreground mountain to another in the far ground. Two mountains of respective locations have 'thicknesses' of their own. 'Three-distances' of Kuo Hsi are illustrated in Figure 4-16. It is only in this way that both deep-distance that fractures body into pieces (深远者细碎, as bodies of their own 'thicknesses') and level-distance of spatial recession (平远者冲淡, as vision jumps from foreground to far ground) can possibly accord with high-distance.

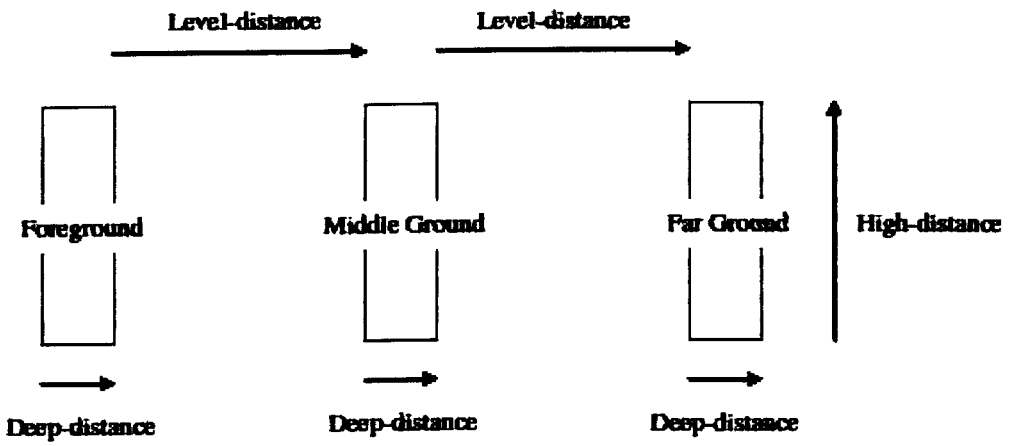

Figure 4-16 The Spatial Demonstration of Kuo Hsi's "three-distances." The formation is depicted perpendicular to the viewing plan which locates at the left side of the foreground. It is better in this way to indicate high-distance, yet still worthy to notice that the three grounds are traditionally deployed in a vertical sequence in Chinese landscape painting.

Kuo Hsi integrates many other techniques of C-P in his 'three-distance' composition to bring fluency in spatial transition. Three manners of them seem more influential. The first is to set a principal mountain peak to control the whole image. This idea of host and guest has already been explained by Jing Hao. Kuo Hsi re-confirms this idea in *Hua Chueh* 画诀 that: "it is important to consider the *big* mountain, named principal peak, in landscape painting. When it is settled, other subordinated ones, nearer and farther, smaller and larger, can be deployed accordingly. That is why the principal peak deserves its supremacy over the whole composition. 山水先理会大山, 名为主峰. 主峰已定, 方作以次近者远者, 小者大者. 以其一境主之于此, 故曰主峰" (Wang Bomin, et al., 2002: 300). The second is to discriminate far from nearby overlapping forms of trees and mountains; meanwhile, indication of shallowness and depth of valleys down the hills have efficient consistence and disruption by forms of mountains 山之林木映蔽以分远近，山之溪谷断续以分浅深 (Siren, 2005: 47). Together with a hierarchy in textures of mountains and water and covering-up by clouds, it creates splendid effect of spatial recession. Last but not the least, forms of mountains are required to bt comprehended as integration of their appearances that are perceived from all the directions and in different distances 山近看如此, 远数里看又如此, 远十

数里看又如此，每异，所谓“山形步移”也. In this spirit, one form of mountains distils essence from hundreds of others that change constantly with every step that one takes when travelling (Fong, et al., 1984: 48).

Figure 4-17 Kuo Hsi, Early Spring. ca. 1072. National Palace Museum, Taipei

It is the first time for C-P that distance, as precedent texts once demonstrate as subordinated to the whole pictorial space, now plays a dominant role over the composition. It becomes truly an 'indispensible quality.' Kao Yu-kung 高友工 thus takes Kuo Hsi's 'three-distance' as the first theoretical interpretation on a firm ground rather than an assumptive portrayal in literature, for it is an applicable scheme of pictorial structure, a mechanism of visual representation successfully testified by works of Kuo Hsi himself.[57]

Figure 4-18 Fan K'uan, Travelers among Streams and Mountains. ca. 1000. National Palace Museum, Taipei

[57] Kao Yu-kung, 'Chinese Lyric Aesthetics' in *Words and Image: Chinese Poetry, Calligraphy, and Painting*, Wen C. Fong and Alfreda Murck, eds. (Princeton: Princeton University Press, 1992), pp.85-86.

Early Spring [Figure 4-17] is a perfect example of Kuo Hsi. 'Three-distance' and three compatible techniques coexist in one representation. Landscape and rocks by the water fully occupy the foreground; they have comparatively stronger colours and more realistic details than others in the distance. River banks thoroughly block the water on both sides which indicate a level-distance between the foreground and the middle ground. Over the river, a mountain vein gradually rises up from the near towards the host mountain in the middle ground, surrounded by clouds to indicate high-distance. The dominance of the host mountain is explicit due to its central position. Similar but more stylistic idea can be seen in an early work of Fan K'uan 范, *Travelers among Streams and Mountains* 溪山行旅 [Figure 4-18] as a counterpart.

However, in contrast with the way that Fan K'uan flattens his mountain, Kuo Hsi applies a similar principle of C-P in spatial composition as that of *Ming-huang's Journey* when encircling the host mountain with spatial recessions on both sides: to the right, when following the running water of an inconsistent river up into the valley, one may arrive at a palatial architecture represented in the style of *jie hua*; to the other side, there is located a creek that extends into distance beyond the reach of sight. Double spatial recessions round up the host mountain and endow it with three-dimensionality. Meanwhile, even the host mountain itself has a zigzag formation receding and rising to the summit. In Wen Fong's (1999: 25) point of view, those zigzag shorelines, rivers and valleys that are compartmentally piled up in a vertical sequence in the picture plane may lead the viewer's eye into an additive distance; and the concept perfectly reflects Jing Hao's approach when he emphasises "thought (思)" and "scenery (景)." A limited far hill is compressed into the middle left, simplified but with a distinct aim to provide a further level-distance from the middle ground to the far. All the mountains are compartmentalised. But their intertwining and twisting forms of the hundreds-of-faces-within-one impression create a successfully unified composition by connecting different parts within a rhythmically flow in form, and by the thickening-and-thinning of ink brushstrokes that are valuable for blurring and merging surfaces (Fong, et al., 1984: 48). James Cahill (1976: 36) concludes that the feature of monumental mountain structures which provide hazy panorama and excellent

spatial atmosphere is the paramount accomplishment in visual technique of Sung paintings.

Scholar elite-artist aesthetics of the late Sung is a shifting vogue fused by refined antiquarianism. It disfavours formal organisation of landscape, yet prefers brush techniques to suggest pictorial atmosphere and the predominance of inner spirit. And such brush features of symbolic meaning mark the rise of Chinese Scholar-elite painting of landscape. Thus achievements of Kuo Hsi remark the summit of naturalism in landscape representation. By then, landscape painting is no longer interested with realistic description of nature. Ironically, such inclination means to learn and revive the ancient spirits and traditions to appreciate the truth of landscape in a more "natural" way. The attempt of the painting court of the Northern Sung Dynasty actually destructs a rebirth of realistic representation in need, and replaces it with a taste of self-symbolism.

4.4 Pictorial Idea and the Rise of the Scholar-Elite Painting of Landscape

4.4.1 Critics on the Birth of the Scholar-elite Painting

Chinese landscape painting through the Tang mainly relies on ideographic forms. Technique of compartmentalisation for three-stage recession generates vast unoccupied space in-between. Consistent landscape later soon shatters, when realism is replaced by symbolism. Wen C. Fong (2003: 274) identifies it as the beginning to create illusionistic space. This would not come true if without particular influence from Chinese scholar elite who are inclined to perceive both the natural world and inner spirit as a whole. Symbolic landscape as such is an "image of mind."

Historically, Chinese scholar elite, normally *Shi Da Fu* 士大夫 in the early stage as a social group, first appears in ancient texts up to the 4th century B.C. They are elevated as one of the four classes in Chinese society,[58] and granted

[58] The others are: the landowners and farmers, the craftsmen and artisans, and the merchants and tradesmen.

with special obligation to direct moral education in the society. It is also a tradition for scholar elite to retreat into suburban districts and mountain areas in searching for a hermetical life, just like the doings of Bo Yi 伯夷 and Shu Qi 叔. These two highly ranked officers during the waning period of the Shang reject the offering from a successive emperor, live as hermits in the mountain, and finally starve to death. For scholar elites, it is an ideal and honourable manner to follow them. After the clash of the great Han Empire in the 3rd century A.D., arduous warfare drives scholar elites away from social life. In the countryside they project unsuccessful political aspiration, altogether with ideological thinking of nature, into landscape representation. Ferocious discussion among scholar elites between Wei-Tsin's dark learning 魏晋玄学 of Taoism and Confucius thinking forms a momentous basis of Chinese medieval philosophy. Tao Yuan-ming 陶渊明, a leading thinker and poet of that time, introduces landscape poetry as a perfect manifestation to intermediate between human body and the *Tao*, the inner reality and actual nature. As Wai-Kam Ho states about the early formulation of picture-image, "the inception of landscape painting was not possible until the refining and focusing of poetic vision into the new awareness of a controlled space – pictorial space – took place."[59] In his point of view, the transference from natural landscape into a pictorial painting of symbolism has endured three phases: the first is to gain the infinite expansion of poetic vision (for Norman Bryson it is an expanded gaze free from the refrain of visual frame; see Chapter 6); the second, to control the visionary space by mentally redefining it as an illusion of coherent and imaginary surface; and the third, to combine the composed landscape image with literary concept.[60] In this spirit, Wen Fong is right if taking landscape painting firstly as an illusion for narratives and poetry, yet his idea to elaborate it as the birth of symbolic landscape painting is questionable. In his point of view, its formal birth relies on the tumultuous

[59] Wai-Kam Ho, 'The Literary Concepts of "Picture-like" (*Ju-hua*) and "Picture-Idea" (*Hua-i*) in the Relationship between Poetry and Painting' in Wen C. Fong and Alfreda Murck, eds. *Words and Images: Chinese Poetry, Calligraphy, and Painting* (Princeton: Princeton University Press, 1992), p.388. Poetry, calligraphy, and painting are regarded as three essentials to scholar elitely life.
[60] ibid., p.389.

period of Five Dynasties (after Tang) that drives recluse scholar elites once again into the mountains (Fong, 1992: 72).

Another critique by Shih Shou-chien 石守谦 brings insight to this problem. As agreed, *wen-jen* scholar elite 文人 literally means "the literate person 能文之士." It means a person with certain education and capability, not of a fixed job. The meaning of Scholar-elite painter is yet far from a concrete fact, making scholar elite painting suffer a lot to define. According to his document survey, Shih Shou-chien (2010: 57) claims that the very concept of scholar elite is nothing but an ideal attitude. In searching for the birth of scholar-elite painting, one has to go back to Six Dynasties when the first that could be identified as scholar-elite painting is an aforementioned scroll painting that faithfully illustrates human figures and interior furniture, *Admonitions of the Court Instructress* of Ku Kai-chih. And the first treatise of scholar-elite painting follows later in Zhang Yen-yuan's *Record of Famous Painters of Successive Dynasties* 历代名画记 (847 A.D.). Siren (2005: 146) on the contrary regards Wang Wei as the founder of the school of *wen-jen* painting. He rationalizes Wang as the first to use floating ink to indicate the atmospheric effect of landscape.

However, it is not until the late 13th century when the Mongols conquer territories of the Sung and bring disorder to the educational hierarchy, that a new social group of independent artists, distinct from traditional Confucianist scholar elites, emerges and marks the rise of *wen-jen* scholar elite and scholar-elite painting.[61]

4.4.2 Spirit Resonance and the Dawn of the Symbolic Pictorial Idea

Yet before that, landscape painting has no explicit hallmark of scholar elite. Basically it rather strives to make representation similar to actual landscape. From Max Loehr's point of view, although later scholar-elite paintings do integrate calligraphy, another of the three perfections in Chinese art, in favour of symbolism, landscape painting up to the early 5th century A.D. intrigues

[61] See Yoshikawa Kojiro, *Five Hundred Years of Chinese Poetry, 1150-1650: The Chin, Yuan, and Ming Dynasties*, trans. John Timothy Wixted (Princeton: Princeton University Press, 1989), pp. 84-85.

nothing of profound aesthetic appeal. Paintings of that time provide no decisive topics for educated persons to represent spiritual sensation of life. Critical transition happens only after Tsung Ping 宗炳 (375-443 A.D.), Wang Wei 王微 (415-443 A.D.), and Hsieh Ho 谢赫 (around the late 5th century) finish their individual statements on symbolic landscape painting.[62] This situation shows preference for language to record ancient paintings and theories; it is also helpful to notice that secular landscape paintings of the Tang, if comparing with the Buddhist frescos in Dunhuang, are more difficult to chronicle. Little visual evidence is supplied for such identification. One has to excavate mostly in literature to re-present the progress in visualisation of that time. Contrarily, painting treatises have rather a consistent progress; and they thus have priority to deliver us a full range of pictorial ideas of the Tang.

To begin with, in the *Preface on Landscape Painting* 画山水序, Tsung Ping firstly regards the soul of the *Hsuan-p'in* 玄牝, the 'Dark Spirit of the Universe', as the inner thought of a picture; it resides in form and inspires the sense of likeness when one exhausts all the possibilities in the subject depicted to appreciate truth 栖形感类，理入影迹，诚能妙写，亦诚尽矣. Tsung Ping realises that a pure mysticism dwells in landscape painting by which spirits of natural forms are transformed onto the surface of painting when symbolic visualisation manifests the working of *Tao* (Sullivan, 1962: 104). Due to this, it seems that Tsung Ping, whose lifetime parallels that of Ku K'ai-chih, makes another decision to elevate landscape painting into great personality; and that is rather less in Ku's naturalistic description to *Yun Tai Shan Mountain.* Hsieh Ho thus follows roughly half a century later and develops a full treatise on symbolic landscape painting. His '*The Old Classified Record of Painter*' 古画品, has been taken as paradigm; because in it appears for the first time a key term as an ultimate goal to achieve in landscape painting: the spiritual resonance 气韵. Sullivan has made a systematic description for all the explanations from modern scholar for the *Six Principles* in this treatise, listed as follows:

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[62] This text is based on a paper, *The Question of Individualism in Chinese Art*, which Prof. Max Loehr presented before the First Meeting of the International Society for the History of Ideas, at Cambridge University on Sep. 1st, 1960.

1. *Ch'i-yun sheng-tung* [气韵生动]

   Spirit Resonance (or Vibration of Vitality) and Life Movement (Siren)

   Spirit Harmony – Life's Motion (Waley)

   That through a vitalising spirit, a painting should posses the movement of life (Sakanishi)

   Animation through spirit consonance (Soper)

2. *Ku-fa yung-pi* [骨法用笔]

   Bone-manner (i.e., structural) use of the brush (Siren)

   Bone-means – use brush (Waley)

   That by means of the brush, the structural basis should be established (Sakanishi)

   Structural method in the use of the brush (Soper)

3. *Ying-wu hsiang-hsing* [应物象形]

   Conform with the objects to give likeness (Siren)

   According to the object, depict its shape (Waley)

   That the representation should so conform with the objects as to give their likeness (Sakanishi)

   Fidelity to the object in portraying forms (Soper)

4. *Sui-lei fu-ts'ai* [随类赋彩]

   Apply the colours according to the characteristics (Siren)

   According to the species, apply colour (Waley)

   That the colouring should be applied according to their characteristics (Sakanishi)

   Conformity to kind in applying colours (Soper)

5. *Ching-ying wei-chih* [经营位置]

   Plan and design, place and position (i.e., composition) (Siren)

   Planning and disposing degrees and places (Waley)

   That, through organisation, place and position should be determined (Sakanishi)

   Proper planning in placing of elements (Soper)

6. *Ch'uan-I mu-hsieh* [传模移写]

   To transmit models by drawing (Siren)

   By handing on and copying, to transmit designs (Waley)

   That by copying, the ancient models should be perpetuated (Sakanishi)

   Transmission of the experience of the past in making copies (Soper) (Sullivan, 1962: 106-107)

Both Sullivan and Siren acknowledge the spirit resonance in the *Six Principles* as the most difficult to achieve. However, for the one of secondary importance, Sullivan believes it is the 'bone structure', yet Siren (2005: 29) prefers 'formal likeness', *Ying-wu hsiang-hsing*. Siren's point of view echoes that of Huang Hsiu-fu 黄休复 of the Northern Sung Dynasty who names *i* (逸, spontaneous) and *shen* (神, formal likeness) as the first two essentials to judge landscape painting.

4.4.3 Formulaic Schemata and the Abandonment of Monumental Landscape Painting

Monumental landscape painting has declined since the late 11th century. The successive emperor Hui-tsung 宋徽宗 (r.1101-25) tries to restore ancient spirits to flourish landscape painting; so he encourages his royal institute of painting to study both nature and ancient models carefully. The result introduces more symbolic schemes than naturalistic description, aspiring deeper thinking of transcendent realism. Hui-tsung is not interested in developing new techniques of C-P for representation; but rather, he prefers "formulaic brush idioms and compositional schemata to illustrate literary and poetic themes" (Fong, 1992: 103). In this spirit, consistent visual effect like foreshortening in landscape painting is useless; and what really matters is the lateral schematic abstraction, compressed onto painting's surface.

Just a bit earlier in time than Hui-tsung, a prestigious document, *Casual writings from the Garden of the Stream of Dreams* 梦溪笔谈, that may be regarded as a Chinese ancient all-inclusive encyclopaedia, is written by Shen Kuo 沈括 to provide detailed descriptions of "parallel perspective" (or shifting perspective as Sullivan translates it) of C-P in landscape painting, just in the

twilight of the shift between the monumental and symbolic landscape representation. A decent landscape painting as Shen claims is able to invite the viewer to explore the nature, and to wander through mountains while discovering the beauty. When appreciating a work of painting, one should not expect a thorough comprehension in the first glance; it requires a meditation of arduous synthesis of vision, waiting scenes to spread out automatically. It sometimes hides behind hills, and then suddenly appears at the bridge by the riverbank. Quite often he make poetry for such beauty: just above the tree tops is the roof of a distant monastery, and to reach there one is expected to saunter up into the hazy valley where more unexpected landscape is waiting to be discovered. The main purpose of landscape painting is to re-create a dreamy journey that is more complicated and far beyond a simple resemblance to nature. For Shen Kuo (1998: 533), it is meaningless to represent an upward roof corner with faithful details as it appears in Li-cheng's 李成[63] style; since landscape painting as such is meant to appreciate the nature with a general understanding, it renounces visual techniques of realism like foreshortening of C-P: "[the general view] is subtle in the mechanism of high and low, far and near, rather than simply uncovering the roof corner! 以大观小之法，其间折高、折远，自有妙理，岂在掀屋角也."

For Sullivan (1979: 72) it is quite an irony for ancient Chinese who fail to develop C-P into a scientific representational system rather than to keep accumulation of undeveloped observations. It would be more ironical especially if considering the fact that the Northern Sung is a bursting period of science in Chinese history. He implies possibilities that Chinese artists may find natural investigation too difficult to be reconciled with their traditional cosmology; or maybe an advanced theoretical thinking of nature forces them to cease the way of observation and take a contrary position of thinking to synthesise world for symbolic unity and harmony.

Outcomes from this synthesis of harmony are the 'constant form 常形' and 'constant principle 常理' by which Sung scholar elites like Su Shih 苏轼[64]

[63] Li Cheng李成 (919-967 A.D.), another famous painter in the style of *jie hua*.
[64] Su Shih 苏轼 (1037-1101) is a famous poet, scholar elite and painter of Northern Sung Dynasty.

identify objects in painting. For them, 'constant form' is also a formal quality of object, like that of distance. It is with these two composite terms that spirit resonance could be achieved. Since when appreciating mountains and rocks, naturalistic observation contrasts representational schemata, one has no choice but to preserve the latter of more importance. It is due to this 'insincere' balance that Chinese landscape painting begins to abandon realism in favour of formulaic languages of C-P in pictorial representation. To keep these formulaic languages, scholar elites mix two essences, the resemblances to precedent masterpieces and their own comments of scholarly taste in the form of brush style. That change leads to, as Max Loehr claims, the self-expressionalism and commentatorialism in later *wen-jen* landscape paintings. Visual techniques of C-P since then become of no help to present spatial depth in representation with formal senses of realism.

4.5 Self-Expressionalism and Later Transitions of Landscape Painting

4.5.1 Consistent Ground Plane and Chao Meng-fu's Self-Expressional Revivalism

Max Loehr (1964: 186-92) discriminates the development of Chinese painting into three phases. The first one lasts from the Han to the end of Southern Sung as "representational art." During this progress, artists strive to correlate isolated elements for a pure sense of space. The second remarked as "supra-representational art" [65] reveals a radical and comprehensive transition in motivation, just like that of the Han. Artists give up formalistic narration of landscape, and in the meantime introduce a calligraphic approach in order to revive "the idea of painting" in a way similar to techniques of writing. In this sense, the Yuan landscape painting is no longer a representational art. Later on, when techniques for pictorial illusion are fully mastered, the landscapists of the Yuan further seek extra-representational qualities in painting (Fong, et al., 1984: 5). And this urge through Ming (1368-1644) and Qing (1644-1912)

[65] See Max Loehr, 'Phases and Content in Chinese Painting' in National Palace Museum, ed., *Proceedings of the International Symposium on Chinese Painting* (Taipei: National Palace Museum, 1970), p.286.

Dynasties pushes forward a third phase as 'commentatorial art.' It is historically oriented style by which painters seldom care about nature but simply make use of paintings as comments on themes, techniques, and contents of ancient masterpieces in association with their own feelings. The image as such is a painting of painting.

Up to the end of the Southern Sung Dynasty around the late 13th century, the progress of revivalism has come with visual techniques of C-P that successfully accommodate landscape in a unified pictorial space. Its texture fluctuates in ink wash and forms overlap delicately. Overlapping vertical planes of mountain forms fan out into the distance, while mists and fogs forbid further consistency to the mountain bases and provide high-distance. What is still beyond identification by the sense of space is the existence of the projective ground plane. Later, situation changes around about 1250 to 1400 A.D. Spatial integration of physical environment is accomplished due to the discoveries of the ground plane, by means of foreshortening and continuous recession of C-P that connect components firmly and faithfully in the landscape (Fong, et al., 1984: 20). All the elements in landscape now stand on the same ground plan that gradually and consistently recedes into the distance. In this sense, Chao Meng-fu's *Autumn Colors on the Ch'iao and Hua Mountains* 鵲秋色 [Figure 4-19], dated 1296, turns out to be critical to indicate such a half-born self-expressional transition. Shi Shou-chien remarks it as a second stylistic progress in scholar-elite painting.

Figure 4-19 Chao Meng-fu, Autumn Colors on the Ch'iao and Hua Mountains, dated 1296. National Palace Museum, Taipei

Chao Meng-fu's *Autumn Colors* has a great archaic sense, in both its spatial composition and depiction of landscape form. Overlapping elements once overcrowded and piled up in the Sung monumental painting now seem to be

intentionally kept apart from each other to form a looser space. They constitute several scenery groups that are disposed diagonally. Where a row of trees juxtapose the right hill foot, it is so antique a manner that the idea of the ancient molded pottery tile of *Yang-tzu-shan* reappears. Nevertheless, all the landscape elements now have clearly defined bases that extend into the distance on the same ground. Foreshortening effect is greatly enhanced by means of the compressed horizontal lines of water waves. Groups of trees and houses in each scene remind us of Wang Wei's *Wang-chuan* 辋川图, while the manner that they nestle up on the ground plane renders a sense that the whole space seems to be physical and measurable. Two diagrams below [Figure 4-20] demonstrate distinctive spatial compositions between Chao's *Autumn Colors* and an earlier Sung painting *Dream Journey through the Hsiao and Hsiang River*. Although Chao facilitates repeatedly wavering strokes to resemble a flat extension into the distance, the treatment to each landscape component is rather archaic. As Cahill (1976: 44) notifies, the distorted size relationship severely contrasts the deployment of the consistent ground plan. Due to that, on the horizontal ground there is an uneasy rhythmic variation which brings spatial unsettlement to *Autumn Colors*. The total effect reflects unrealistic visual phenomena of the early landscape paintings on engravings and stone carvings. Why is that, especially when Chao has already given the representation a significant consistent ground which is of enough sense of realism for C-P?

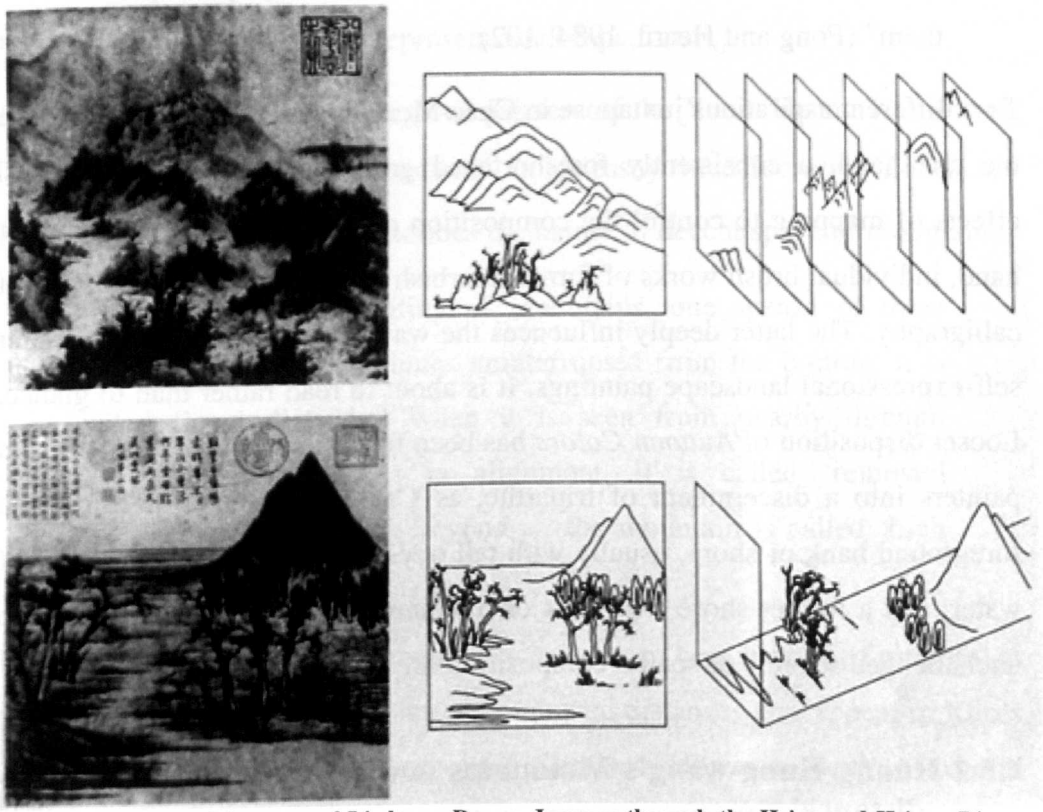

Figure 4-20 Upper: Diagrams of Li-sheng, Dream Journey through the Hsiao and Hsiang River, undated ca. 1170. It shows overlapping mountain motifs receding in a continuous sequence. Lower: Diagrams of Chao Meng-fu, Autumn Colors on the Ch'iao and Hua Mountains, showing landscape elements arranged along a continuously receding ground plane (Fong and Hearn, 1999).

It is because Chao borrows emerging techniques of brush working from the art of calligraphy to depict landscape forms, especially those of trees. Chao is the first landscapist who explicitly explains the transgression in visual techniques from calligraphy to landscape painting. Wen C. Fong describes Chao's calligraphic style of painting as follows:

> "The archaizing calligraphic brush technique was consciously applied to landscape for expressive purposes: every element of the painting is depicted with the same calligraphic brushstroke. Although the composition shows an advanced understanding of spatial continuity, with foreground rocks and shorelines receding along a continuous ground plane, the drawing of trees and rocks follows the seal-cutting principles of positive and negative designs: round, controlled iron-wire lines are done in the seal-script style of calligraphy, and the outlines of tree and rock forms

define the spaces between these forms as well as the spaces within them" (Fong and Hearn, 1984: 102).

Two different aspirations juxtapose in Chao Meng-fu's landscape painting. On the one hand, a consistently foreshortened ground plane provides faithful effects of mapping to control the composition of picture planes; on the other hand, individual brush works of forms refurbish them with the writing style of calligraphy. The latter deeply influences the way of spatial perception in later self-expressional landscape paintings. It is about to read rather than to glance. Looser disposition of *Autumn Colors* has been further improved by later Yuan painters into a discernment of tripartite, as Cahill (1976: 71) describes: "a foreground bank or shore, usually with tall trees growing on it; an expanse of water; and a further shore with hills or mountains beyond." This becomes an unchallenged scheme of spatial composition for later landscape painting.

4.5.2 Huang Kung-wang's Mountains and the Variation of 'Three-distance'

Kuo Hsi's declaration of 'three-distance' still has phenomenal influence upon later landscape painting. Mechanism of overlapping and inconsistent forms to indicate spatial depth remains quite successful. Chao Meng-fu feels unsatisfied and supplements a consistently receding ground plane, and his representational manner of juxtaposing landscape scenes and elements still reflects a rather ancient spirit. As the brush work of *ts'un* takes more serious role in the self-expressional landscape, spatial composition by means of C-P seems to be losing supremacy once again. This situation becomes harsher when later accompanied by the inflow of Zen spirit of Buddhism, for which works of Ni Tsan 倪瓚[66] perfectly demonstrate.

However, it is inaccurate to believe painters no longer care about space. Like the tripartite of later Yuan painting, they rather choose a way to simplify spatial depth, which is once complicated and intertwining in the precedent Sung painting, into schematic formulae convenient to handle. During this

[66] Ni Tsan 倪瓚 (1301-1374) is a painter and poet, listed as one of four most distinguished of the Yuan Dynasty.

reduction, spatial depth is far from being ignored, but in contrast, empowered by new techniques of C-P to represent landscape forms.

For the other three most prestigious painters of the Yuan, Huang Kung-wang 黄公望 is all agreed to be precedent.[67] In his essay titled *Secrets of Landscape Painting* 写山水诀, Huang describes the nature of decent space of mountains:

> "In discussing the painting of mountains, one speaks of three distances. When it continues uninterrupted from the bottom, it is called 'level distance;' when it is seen from nearby through divisions and openings in alignment, it is called 'removed distance;' a distant view beyond ... the mountain is called 'high distance.'"[68]

In the first glance, Huang's three-distance seems to be a simplified proposal to that of Kuo Hsi, for two of the three nominated distances also appear in Kuo's *The Lofty Ambition in Forests and Streams*. However, with a careful examination, one may notice that all the distances that Huang interprets have more restrictive senses. It is about how to organise mountains, not the whole composition of landscape painting as Kuo proposes. According to that, Huang's elaboration to each 'distance' is expected to be different.

Firstly, level-distance for Huang indicates consistency in mountain feet by means of riverbanks or trees down the hills. Level-distance in this sense hardly relies on the predominant triple grounds, fore-, middle and far ground; because it only concerns forms of mountains. To perceive level-distance, vision promotes no giant leaps of Kuo Hsi's *Early Spring*, in which level-distance is generated by the spatial depth from the main peak in the middle ground to the hazy, small and distant hills. Moreover, connections between mountain feet for Huang actually indicate a collateral requirement that all of these mountain feet should be deployed on the same ground plane extending into depth. This lateral meaning ideally matches the spatial composition in *Autumn Colors* of Chao Meng-fu, and consequently rejects that of Kuo Hsi in which overlapping

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[67] The four great masters are: Huang Kuang-wang (1269-1354), Ni Tsan, Wu Zhen 吴镇 (1280-1354), and Wang Meng 王蒙 (1308-85).

[68] The English translation is quoted from James Cahill, *Hills beyond a River* (New York: John Weatherhill, 1976), p.87. The original Chinese text is "山论三远, 从下相连不断谓之平远, 从近隔开相对谓之阔远, 从山外远景谓之高远" (Wang Bomin, et al., 2002: 686).

triangles of mountains have no clearly defined base planes. However, the latter still exists frequently in Huang's works where continuum of mountain feet and river banks is interrupted, and beyond that ending point a distant view is provided in a manner to overlap mountain forms in the middle and far ground.

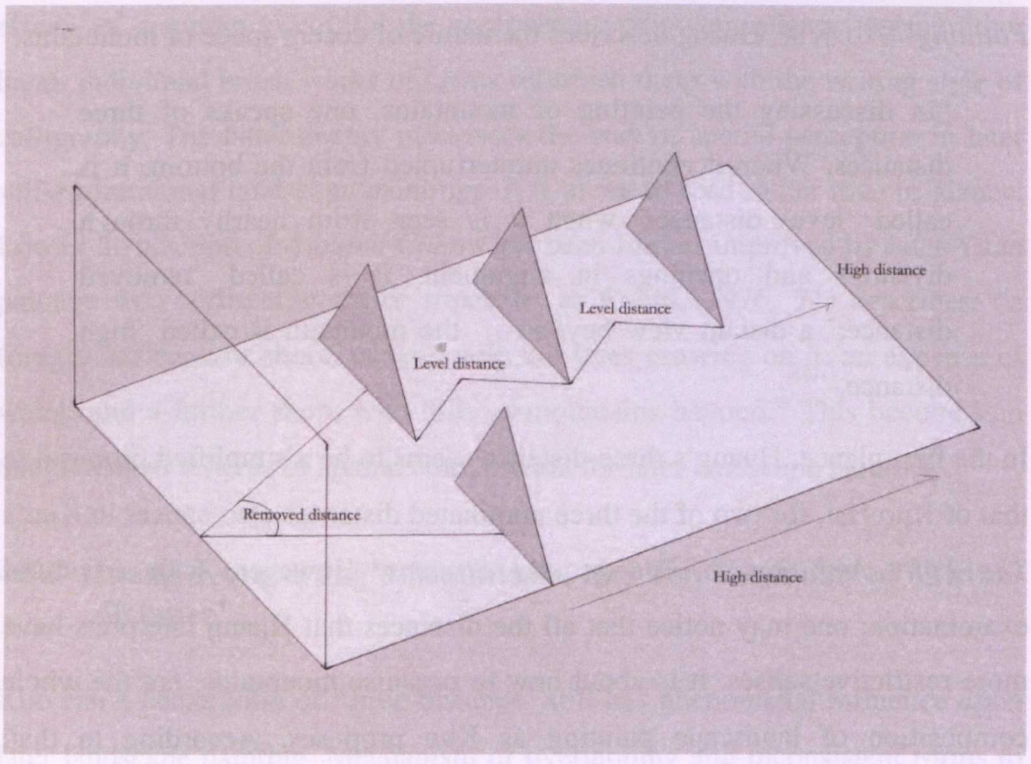

Figure 4-21 Diagram of Huang Kung-wang's 'Three-distance', showing their indications of different positions.

The second distance translated by Cahill as 'removed distance' means no spatial depth. In fact, when Huang adds two associating definitions for it, "in the foreground" and "in division and opposition," the 'removed distance' is obviously of a visual span between two mountains. For instance, being aligned in the foreground, two mountains sandwich a valley or vast water that provides a wider visual angle. That is the visual width, *Yan-jie* 眼界, the 'opening' and 'closing' movement often paraphrased by later theorists. In an extreme situation when two mountains are placed closely to both left and right edges of the frame of the painting, the width of vision thus becomes an all-inclusive 'removed distance'. The third distance is neither about the height of image of certain mountain. Kuo Hsi measures 'high-distance' from the foot to the top of a mountain, but Huang describes it as a distant view "beyond" the mountain top into infinity. Contrarily, it seems like the leaping 'level-distance'

of Kuo between the middle and far grounds, which means Kuo's 'level-distance' has limits. Huang provides no further comment on it, yet his differentiation of three distances contributes to a new way to integrate spatial composition: first, to split vision by juxtaposing two mountain scenes in the foreground, then to make additive spatial recessions along the consistent mountain feet of these mountains by level-distance, and in the last to finish pictorial space with distant views over mountain tops, as Figure 4-21 demonstrates.

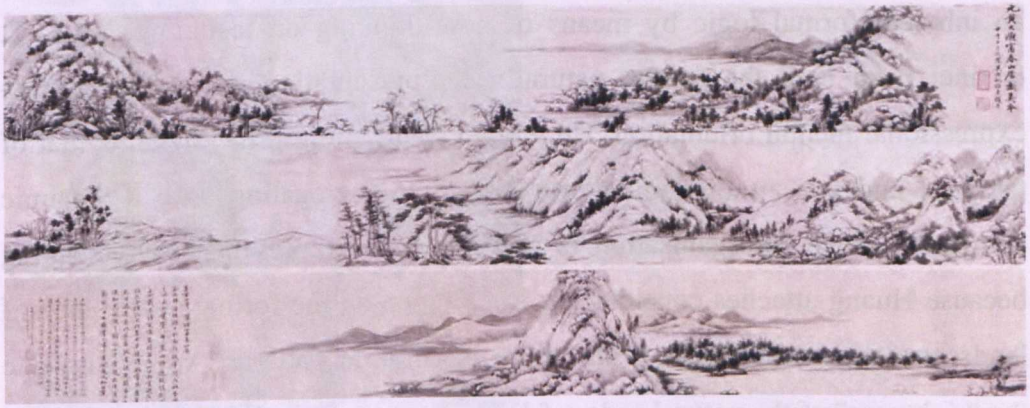

Figure 4-22 Huang Kung-wang. Living in the Fuchun Mountains. c. 1350. National Palace Museum, Taipei. The painting is divided here and viewed from right to left, up to bottom in a consistent sequence.

Living in the Fuchun Mountains [Figure 4-22] is a later work of Huang Kung-wang. It is sufficient to demonstrate his far-reaching innovations in spatial composition of landscape painting. As Cahill discloses, Huang actually "structures" space other than fills it. In general, three series of mountains are deployed, one at the centre and the other two occupying the starting and ending of the scroll. Accordingly, a thorough visual span is created from right to left, and divided into separate subordinate removed distances. The mountain scene on the right has simultaneously a level-distance which extends from the foreground landscape to the middle island in the lake, and also a high distance due to the overlapping forms of foreground and far mountains. To put it in another way, level-distance successes if forms of mountain feet still connect; otherwise, if formal continuity is broken, a high-distance replaces and appears into infinity. In Huang's works, high-distance sometimes appears in the middle ground but seldom in the foreground; as it forbids any spatial extension from foreground to the middle and far grounds, which possibly denies

righteous formation of three distances. In the middle scene of *Fuchun Mountains*, level-distance is explicit by the recession back and forth along the river bank, while hills merge into each other to formulate an unbroken linkage foreshortening into depth. A foreground sand beach with a couple of groups of trees induces another removed distance from the middle scene to the left gorgeous peak. Here spatial composition repeats in the manner to mirror the right-side mountain.

If comparing with other late Yuan painters, Huang in fact strives to modulate an inherent formal logic by means of new thinking on techniques of C-P, distinct from both the former naturalistic representation and the later self-expressional mental orientation. He revives many Sung principles like that of the host and guest mountain intertwining, not aggregating, into a dynamic composite. Such re-organisation is still of certain representational meaning because Huang attaches considerable importance on the formal appearance of landscape elements, though with "more intelligible patterns" which indicate the "rightness" of the natural order of *li* 理.[69]

4.5.3 Sacrifice of Spatial Depth and Wen Cheng-ming's Vertical Formation of Mountains

From the enlightenment of self-expressional landscape painting of the Yuan Dynasty, painters struggle between formal likeness and inherent thoughts of natural order. Late Yuan painters like Wang Meng 王蒙 decide to improve it in a contrasting direction to relinquish the stability of nature and push representational landscape further away in an incomprehensive and unintelligible manner.

[69] The connection between *li* 理and *ti* (体, the body) that dominates Neo-Confucius thinking of the Ming Dynasty will be further examined in Chapter 6 in relation to Chinese landscape design of scholar elite garden.

Figure 4-23 Wang Meng. Dwelling in the Ch'ing-pien Mountains. Dated 1366. Shanghai Museum

Wang Meng is the grandson of Chao Meng-fu and has received early instruction from his grandfather. He is highly regarded by both Huang Kung-wang and Ni Tsan as an incomparable figure for the last one hundred years before their times. Although his early works reveal certain degree of dependence on his grandfather in brushwork and motif, he does proceed later for a distinct individual style among his contemporaries. While Huang Kung-wang and Ni Tsan prefer a sparse composition, Wang insists on dense packing of hills and mountains. As mountains rumble to recede into distance and the brush of *ts'un* provides uniformity on the surface, the whole composition is of confusion, animation and strange homogeneity.

In Wang Meng's *Dwelling in the Ch'ing-pien Mountains* (dated 1366) [Figure 4-23], a strong sense of aggregating small landscape elements into the whole composition dominates the emotional experience within representation. Obviously, Wang has abandoned the existing spatial structures and techniques of C-P that his grandfather and Huang Kung-wang established, in favour of a quality of intertwining and compression in visual forms of mountains. In this painting, all the landscape is unstable and crowded in the same foreground and gradually built up while merging and dissolving into each other. James Cahill (1976: 123) identifies Wang's style as "decidedly unintelligible in its presentation of space and form," which brings metamorphic fluency to representation and a chaotic effect to perception. Wang Meng might be the first to discover the possibility to break the levelled spatial structure, and compensate it by means of winding movement and diverse textures to render new visual meanings of spatial composition.

Cahill regards Wang Meng's new ideas as truly isolated but extraordinary achievements that are unrivalled elsewhere and refuses followers. However, that might not be true especially if considering the antiquarianism of later painters, for which Wen Cheng-ming 文徵明 keeps making copies of Wang's works and introduces his ideas into form-building when presenting mountains and garden.

Wen Cheng-ming is an ideal exemplar for Chinese traditional scholar elite in character and career. He has a curiosity over a large area, learning archaism by studying history of art through literary documents and resembling ancient

paintings in their styles and motifs. In Chao Meng-fu's work Wen Cheng-ming finds perfection for an image of the Confucian scholar elite, testified by many of Wen's colophons and comments. However what he later inclines to provide in landscape painting is a complexity in form and a spatial formula that rejects senses of depth in spatial structure, both of which he carries on from those of Wang Meng.

However, Wen has no admiration to Wang in his early years. His early basic spatial composition follows the manner of Shen Chou 沈周, who prefers simplified formulae of C-P to construct space into depth. Wen concentrates on depicting landscape elements as clarified and objective as possible, and organising them in a levelled sequence that recedes into the far mountain. For him, prototypes of forms originate in Shen Chou's work. However, no sense of fluency and movement is discernible: landscape elements stand in stability and permanence, and basically the whole composition is of nothing but quietude. In his *Spring Trees after Rain* [Figure 4-24], rocky riverbanks formulate a zigzag route and present more physical objects, severely cut on the sharp edge to provide a spatial sense of "a rock that has three faces." And its visual form has quite a similar feature as that of Chao Meng-fu's calligraphic transformation of trees. River banks with no texture of spatial recession are rather plain on the top; and due to their closeness to the surface of the river, high-distance is not created at least in the fore- and middle ground. On the other hand, the formation of the river is basically diagonal, winding back and forth into the distance, yet without clear rhythm. A far mountain as the host image stands in the middle to provide a sense of symmetry, which is rather stressed by Wen in many of his later landscape paintings. As a whole, spatial recession is somehow represented by a control over different values of visual compactness of landscape. Up to the 1530s, Wen Cheng-ming still clings to describing landscape scenes in a way of Shen Chou, but later suppresses spatial recession by placing the sky and far distance in the background of void, leaving the image with an indeterminate space visually with neither depth nor surface. There is little indication of location, and thus the scene is floating by itself in the middle of nowhere.

Figure 4-24 Wen Cheng-ming. Spring Trees after Rain, 1507. National Palace Museum, Taipei

Figure 4-25 Wen Cheng-ming. Luxuriant Pines and Clear Springs, 1542. National Palace Museum, Taipei

Yet his later style dramatically changes. See a later work of him *Luxuriant Pines and Clear Springs* [Figure 4-25]. A clear introduction of Wang Meng's style of mountain form provides this landscape painting with a most compelling creation in the 16th century.[70] Plantation gives an impenetrable enclosure around the central plateau. There is no transition of spatial depth between the circling landscape elements. Actually one can hardly identify any plane in this powerful treatment of space. In the depiction of the Indus trees, strong texture of brushwork gives trees and stones a sense of physical mass. An unbreakable wall blocks further view into the distance. On the other hand, the sky in the upper left corner is totally unpainted in the same manner as that of the plateau where a scholar elite seats. If comparing it with *Spring Trees after Rain*, three-dimensionality is avoided; and, on the contrary, the losing rhythm is regained by a mannerist treatment to all formal components. Wen keeps the central place unnaturally stable and lifeless, yet landscape turns to be superbly dynamic. Spatial composition relies not on techniques of consistent or overlapping recession of C-P, but on the contrast between densities of textures. For *Luxuriant Pines*, it is in a way of two extremes to paint landscape fully occupied by *ts'un* of trees and to overlook the void deliberately.

With mountainscapes, Wen Cheng-ming gradually and finally accepts Wang Meng's pictorial idea which frees him from traditional restraints techniques of C-P for representation. Basically three aspects conclude: a distorted space, a wrenching movement, and an elaboration of flat surfaces at the expense of depth. The first two rely on a fine treatment to texture, yet the last demands a variation to the precedent spatial composition of distance. As *Luxuriant Pines* shows, space is crowded and telescoped against the surface. In a colophon of a painting copy of 1522, Wen makes a comment on Wang Meng's painting:

> In the first year of Chia-ching in the third month on the fifteenth day I paid a visit to the Li-wen Library, where (my host) brought out for my inspection a small painting by Shu-ming (Wang Meng).

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[70] Anne de Coursey Clapp, 'Wen Cheng-Ming: The Ming Artist and Antiquity' in *Artibus Asiae*. Supplementum, Vol. 34 (1975), p. 51.

(The forms) were fine and delicate, (and the viewpoint) was *kao-yuan*"[71] (Anne de Coursey Clapp, 1975: 56).

Anne de Coursey Clapp provides a further explanation of *kao-yuan* (high-distance) as the disclosure of "a clearly outlined ground plane from which a complex ... mountain side winds upward." In Wen's mountainscape, when possibilities of spatial depth are prohibited, the only way out to render the sense of space is to revive a single vertical plane formidable to penetrate, with all the landscape coalesce as a whole. Accordingly, the composition relies on a sequence of reading from bottom to top, with the station point continuously lifted up in the same pace as that of the progress of building landscape upwards layer by layer. In this way, Wen Cheng-ming and his 'master' Wang Meng bring variations to high-distance and enlarge the visual angle between the horizontal ground and the vertical tapestry of texture and rhythm.

The birth of Wen Cheng-ming's *Luxuriant Pines* is recognised by Anne de Coursey Clapp as the beginning of a full exploration of possibility of formal expression; 'representation' of scholar-elite painting of landscape is totally dependent on nothing of techniques of representation for an external nature but of a formal transformation for its own sake, which becomes a feat of great synthesis.

4.5.4 Great Synthesis: Tung Chi-chang and the Momentum of Spatial Depth

Up to the 17th century A.D., the elegant and introspective style of Wen Cheng-ming's scholar-elite painting overwhelms the society of art, while too many vulgar forgeries are deluging and destroying the formal taste of scholar elites. The development of scholar-elite painting is at stake due to such a merging influence of business trade upon both artists and the unqualified connoisseurship of their sponsors. Accordingly, it is very urgent for artists to re-establish a genealogy of Chinese art to restore ancient spirit of both nature and inner feeling. Hopefully a restricted diagram can thus be available for

[71] The Chinese text is quoted as: "嘉靖改元岁在壬午三月望日偶过文书屋, 出示叔明小幅, 纤高远."

learners of Chinese painting to follow when imitating ancient masterpieces, and within this antiquarianism to pursue self-expressional transformation.

Tung Chi-chang 董其昌 (1555—1636) appears to be the very art historian and painter to fulfil this purpose. He criticises the long tradition by which painting and poetry should be treated identically and simultaneously; it is, in Tung's point of view, harmful if not discriminating professional masterpieces from amateur philistine works.

In order to restore ancient spirit with a new formal structure, Tung Chi-chang firstly proposes a division of two schools to conclude most precedent painters. One of these lines starts from Wang Wei and gradually passes down through Tung Yuan 董源, Mi Fu 米芾 of the Sung, the four great masters of the Yuan, all the way to Wen Cheng-ming and his master Shen Zhou 沈周 of the Ming; all of them formulate upright standards for scholar-elite painting as the 'South School'. The other legacy includes Li Ssu-hsun, Kuo Hsi and many later artists famous for their paintings of *jie hua.* In this way, Tung purifies the progress of Chinese art within a grander historical context that lasts 1,500 years; and in the meantime he establishes a basis for structuralist analysis on the formal styles, which equally applied to forms of spatial depth.

This arduous integration is called 'the great synthesis.' Tung refines the spirit of scholar-elite painting by distilling it from all the available resources of ancient paintings. For brushwork, he is glad to embrace the calligraphic stoke of Yuan painters and the chiaroscuro effect with the ink washes of *ts'un.* In composition, he seems to prefer the levelled space of Northern Sung paintings manipulated by the diagonal formation of planes; and the cubic mountain masses are regarded by Tung as something abstract and organisable that can be deployed freely in abstract space. Landscape composition can then be designed in favour of presenting rising-and-falling, dividing-and-gathering, and void-and-solid movements. He borrows from techniques of Huang Kung-wang a momentum of mountains by means of conglomeration of isolated forms of rocks. He twists and mingles them into landscape painting, in which the building of mountains is rather like a jigsaw puzzle game:

> In painting, mountains must show concave and convex forms. One begins by outlining the mountains first according to their outward forms and momentum, then, within the outlined forms, applying straight texture strokes. This is the method of Huang Kung-wang.[72] (Fong, et al., 1984: 171).

He learns from original styles of Huang Kung-wang, yet further refines and simplifies it to applicable formulae. However, his method is "intuitive and pragmatic rather than … historical and analytic" (Fong, et al., 1984: 169).

'Momentum' is a key term of calligraphy, not of landscape painting. Tung Chi-chang studies the styles of ancient calligraphers like Yen Chen-ching 颜真卿 (A.D. 151-230) and Wang Hsi-chih 王羲之 (ca. 307-ca. 365), and then he is crazy about Mi Fu's writing and the story that Mi Fu was criticised by his master as having no momentum and later suddenly enlightened to abandon his earlier style completely. This inspires Tung Chi-chang as well. In a similar manner, he breaks the orthodox of vertical superimposition of pictorial planes of C-P, distorts and fuses them into each other. Landscape painting for him is no longer simple representation of nature with two-dimensional patterns, but rather a perfect piece of calligraphy with weaving brush forces in favour of the abstract movement of momentum. Paintings which fail to do so cannot be lively "from all sides."

Figure 4-26 Tung Chi-chang. River and Mountain on a Clear Autumn Day 江山秋霁图, ca. 1610s. Cleveland Museum of Art

Tung Chi-chang firstly delineates profiles of the mountains and then textures them. In his opinion, it is a prerequisite to maintain the way by which ancient painters divide landscape mainly in three or four groups; and it is why they

[72] The Chinese text is quoted from Tung's text *Essence of Painting* 画旨as "作画, 凡山俱要有凹凸之形, 先钩山外势形像, 其中则用直皴, 此子久法也" (Wang Bomin, et al., 2002: 214).

succeed in formulating the momentum 山之轮廓先定, 然后皴之 … 古人运大, 只三四大分合, 所以成章,虽其中细碎处甚多, 要之取势主. In so doing, he separates mountains in *River and Mountain* [Figure 4-26] into three planes that are diagonally distributed in the picture. Within each group, Tung facilitates a simplified technique of C-P of Huang Kung-wang in placing the mountain slopes in a more disparate manner; and meanwhile he deliberately treats the rocks in a way that none has profile-image, foreshortened in one direction or other. The oblique images make viewers' perception intermittently leap and twitch in the seemingly trifle forms. Deployment of trees and mountains has a feature of grouping division with an explicit characteristic of improvisation; for every stroke seems to bear new possibility to distribute the following space. An obtrusive foreground rock breaks the consistency of scale, which is also incompatible with the bigness of trees laid in level-distance grounds. Yet all of these forms are stretching in an integrated movement of momentum, which spreads out with a great sense of power.

Figure 4-2 Tung Chi-chang. *Landscape* 壬子八月山水图轴. 1612. National Palace Museum.

Figure 4-1 Tung Chi-chang. *Tree Shadow on Summer*. 夏木垂阴图轴, 1619. Natioanl Palace Museum, Taipei.

The most impressive achievement of Tung Chi-chang is a compositional style, as shown in two landscape paintings, now in the Palace Museum of Taipei [Figure 4-27 and Figure 4-28]. In both paintings, Tung introduces a similar central rocky mountain in the middle ground. It has many counter-effects to C-P, like the incompatible scale which breaks the foreshortening effect of forms of mountains. It also divides the composition abruptly by two different schemes: in the lower half, a void of space is indicated by surroundings trees and river banks, while in the upper half, mountains dominate the landscape, occupying and resisting the further view into depth; on the other hand, the left side of the central rock is fully blocked by far-ground mountains with the rocks piling up in a manner of Wang Meng's painting, while on the right side of it a clear sense of level-distance is rendered by the consistency of overlapping and foreshortening of mountain feet, by which spatial depth extends far away. Getting back to Kuo Hsi's *Early Spring* and the *Ming-huang's Journey* of Li Ssu-hsun's style, they both have the similar strategy to deploy two level-distances of diagonal discernment around the host mountain to provide a sense of three-dimensionality. Tung rejects this manner and sacrifices foreshortening on the left side. It may be due to a preference to uncertainty and unsettlement. This feature can be seen throughout the composition where texture of landscape is deliberately suppressed in favour of formal abstraction. The painter reaffirms bodies of rocks by the effect of gradual chiaroscuro, while in others he denies the physical existence by using strong brushworks of hemp *ts'un*. Tung Chi-chang establishes a new schema of C-P between the naturalistic representation and the abstract self-expression.

His whole circus play begins with his learning of ancient modules and motifs, fixed forms and techniques, all techniques of which were once made use of for the naturalistic representation. Yet now it fulfils a contrary purpose of abstraction. James Cahill identifies this style of Tung Chi-chang as one of the greatest achievements in Chinese landscape painting. It is a self-expression of form yet with representational techniques of C-P, a great synthesis of ancient manners and a significant conclusion for all the precedents; in this manner it has incomparable influence over later landscape painting.

From then on, forms of landscape evolve for its own sake and thus decline the visual techniques of C-P for a naturalistic spatial depth. Body of architecture and landscape that was once deeply cherished in Chinese painting is fully abandoned.

Summary

Chinese landscape painting has a unique progress of C-P in spatial depth. Depth relates to the twofold nature of landscape that can be regarded either as two- or three-dimensional compqsition. In its early stage, Chinese landscape painting functions as a mapping system at a basic level of *divergence of direction*; later aspiration to conquer three-dimensionality and the pictorial representation of nature drives Chinese landscape painting along a different way. With directional discernment, it extends and spreads to indicate spatial recession. A further division from this two-dimensional extension brings about the mechanism of 'space cell.' Corresponding compartmentalised space flourishes in the medieval art of China. In place of space cells that are distributed in either a horizontal or vertical direction, a new transformation of diagonal composition in a zigzag formation turns out to be more effective especially when indicating both sides of a 'central mountain' to compensate three-dimensionality with a twofold directional discernment. In this spirit, Kuo Hsi introduces 'three-distance' and endows the Northern Sung landscape painting with an unsurpassed naturalism.

However, the rising spirit of scholar-elite painting of the Yuan renounces formal likeness of nature and demolishes the basis for Chinese visual culture of C-P to give birth to a similar visual system of scientific perspective. Chinese artists prefer antiquarianism to restore the pictorial ideas once lost, and thus accompany a rising requisite of spiritual resonance in landscape painting. Painters improve precedent techniques of overlapping triangles, by either introducing a consistent ground plane or improving the connections between the triangles of mountain feet to indicate spatial recession. Meanwhile they make brush work a new representative of calligraphy which

greatly enhances the progress in self-expressionism in landscape painting. Spatial depth is at stake when Wen Cheng-ming dedicates formation of mountains in the same manner of Wang Meng who prefers vertical deployment that sacrifices senses of distance. The last call of naturalistic representation finally ends up when confronting the "great synthesis" of Tung Chi-chang who suppresses spatial depth in favour of a formal movement of momentum as the true nature of landscape painting. This synthesis terminates the applications of the visual techniques of C-P at last. [See Appendix 3]

The formal analysis on visual techniques of C-P in Chinese representation of spatial depth in architecture and landscape is of particular importance. It means to provide strong evidences to show a gradual transition in styles of C-P from primitive manners of line to highly developed techniques like foreshortening and integrated discernment of directions and distances. The historical survey is based on a principle of examination accordingly to formal appearances of visual techniques; yet latent driving forces for such a transition still remain untouched. Why would ancient artists have to apply particular techniques of C-P? Why does directional divergence have to spread in all directions and is it sufficient for more delicate spatial recession? Similarly, why can foreshortenings on both sides of the object in a surface plane compensate for the three-dimensionality? Is it only a consequence of artistic preference, a question of aesthetics?

Visual techniques of C-P are expected to preserve correlating visual meanings. Their functions rest in a mechanism of how one sees an image and perceives its spatial depth with C-P at disposal. It is a question to the nature of psychology of visual perception and its influence to visual art which is about to be exposed in the next chapter.

Chapter 5 Vision and the System of Visualisation: Representational Mechanism of Form in Visual Perception of Depth

The eye which is the window of the soul is the chief organ whereby the understanding can have the most complete and magnificent view of the infinite works of nature.

—— Leonardo da Vinci

The conception of an aesthetic form in the sensible world is possible only because we ourselves created the fundamental elements of form. All understanding of spatial forms, for example, is ultimately bound up with this activity of their inner production and with the law governing this production.

—— Ernst Cassirer

In the Cartesian orientation of the world, space is rather simple, homogeneous, permanent and independent. The object that manifests the complete subjective matter has a stable location, an enduring form of self-existence. It is the same as the subject itself, which has only one occupied place as well, and feels free to merge into or isolate from the object; and because of that it has no restriction, if no object entails, in its existence. In other words, the transformation in the objective world does not require a correlating change in a subjective one. It has a separate experiential horizon on its own behalf. If space can only be calculated as such in a gridded 3D map, the traditions of the visual representation of space in both east and west would be but a parallel to that of modern architectural drawing which projects constructional elements onto a planar medium of paper.

After the examination on Chinese visual techniques of C-P in Chapters 3 and 4, one could count on it and make difference without any effort between an

artistic architectural/landscape painting and a formal architectural rendering on tracing paper. It is obvious that Cartesian construction of the world may provide only a particular and purposive basis for the visual representation of space; and artistic visual representation of space indicates rather pictorial ideas that cannot be calculated by pure metaphysical deduction. The Chinese visual context provides distinct understanding on visual perception of space, by using neither pictorial idea nor Cartesian construction, but through application of kinds of visual techniques of C-P. However, it is still unclear in what manner such a particular visual technique differentiates itself from others of contemporary theories. It leads to a question that how ancient artists transform visions of the actual environment into arts of pictorial representation? Is there any visual rule to follow?

This chapter aims for an expedition in philosophical thinking of relations between the actual world and vision, as well as between visuality and visual techniques. It seems that Chinese visual art places mechanical premises on space, body and distance, other than customs and traditions. Such premises must be selected according to particular ideas upon image, space and representation of them. It thus deserves further exploration on mechanisms of visual perception of spatial depth addressed in this chapter.

5.1 The Differentiation and Transformations of Spatial Perception

Needless to say, Cartesian organisation of space is based on the idea of scientific naturalism, proposing the irreplaceable objectivity of constituents in the world. The absolute existence of things claims that the whole world operates under the theorems as pure and deductive as mathematical equations that can be quantitatively simulated. However, visual perception of space has no such ideal proposition. This is because of the physiological mechanism of eyes. More important is the manner of psychological interpretation of human visual perception of an object.

5.1.1 Sense and Perception of Space

The way of seeing objects is actually not a recent problem to conquer; such philosophical dialectics have been ongoing since ancient periods when the differentiation of visual images of an object from its true qualities became part of philosophical thinking. Is space of representation?

Historic thought on space does not relate space with any denotation of encompassing substances like that of the *quantum continuum* of modern science. Greek philosophers rather prefer a discontinuous composition of space because, for them, there are too many geometric variations to deliver a definite answer. Plato in the *Timqeus* acknowledges space as a hybrid concept that denies any adequate description; thus, with a pessimistic point of view, Plato condemned any possible simulation of space, including the pre-perspectival view, since they "distorted the 'true proportions' of things and replaced reality ... with subjective appearance and arbitrariness ..." (Panofsky, 1997: 71). Aristotle believes there are different orientations imposed on the anisotropic substratum, which bring too many difficulties to represent space.[73] In this sense, Greeks never successfully perceive space with three-dimensionality, but rather confine it to plane. During the time of Nocolas of Cusa and Giordano Bruno, the Cartesian idea of space is still beyond reach; and thus the later *costruzione legittima* of homogeneity hardly influences the visual perception and representation in the early part of the fifteenth century. When Descartes later finds space totally representable and notices the spatial characteristics of visual images can partly "resemble" those of the real object, he realises, however, that this vision is imperfect and cannot be taken as an equal translation from the external luminous object to the projected image on the retina. Further negatively, a Newtonian view rather supports a "true" mathematical space that is absolutely abstract and theoretical, and it seriously blocks any possibilities of sensationalism of space (Cassirer, 1944: 44-45).

In a contrasting point of view to explain human nature, David Hume (1978: 1) proclaims that the twofold perception of the human mind can be concluded by *Impressions* and *Ideas*. For him, those psychological senses like passions and

[73] See Albert Einstein's preface in: Jammer, M., *Concept of Space: The History of Theories of Space in Physics* (Massachusetts: Harvard University Press, 1969), p.25.

emotions, as he describes "[they are] the first appearance in the soul," fall into the former category; on the other hand, by *Idea*, he acknowledges all the perceptions re-oriented by thinking and reasoning. Hume particularly emphasised that the sight and touch belong to *Impression*, partly because they are the immediate sensations that lack intellectual process. However, they are both fundamental components that convey to humans the original impression of space. Meanwhile, in Hume's opinion, the understanding of the world firstly depends on the ability of "the chain of reasoning." However, when space and time become indivisible after the self-resolving progress by reasoning and reduction, they turn out to be merely a thin line of order or manner. That is the inevitable after-effect and destination of reasoning which leads to the very situation that space no longer exists. Hume thus advocates that a pure logical deduction is unfaithful and unnatural; and the only reliable source of reasoning remains in the senses. In other words, space and time live in the senses, within the sphere of sight and touch, etc.

So there would be no doubt in claiming the importance of sense in the perception of the world; yet what is still unclear is what sense and perception are on earth and in what kind of relation they bring such dominance to the comprehension of space. That would begin with their individual definitions.

Throughout history, perception has been used rather precariously. Hamilton thinks that it is knowledge, as in the conscious reaction of an external object; Spencer uses a complicated definition of the discernment of relations between already-at-hand states of consciousness that are both presentative and representative.[74] Julian Hochberg (2007: 23) warns that the word "perception" carries too many ill-defined connotations, such as "awareness," "discrimination between stimuli," and "environmental presence of the perceived object." And he takes MacLeod's translation of perception as the phenomena by which objects and relationships become "here," "now" and "real."

[74] See details of Sir William Hamilton's thinking on perception and sense in Noah Porter's book *The Human Intellect: with an Introduction upon Psychology and the Soul* (Bedford: Applewood Books, 1887), pp.236-40. And also, Hubert Spencer's disagreement with Hamilton is in the same book on page 656.

William James provided an initial explanation in the point view of modern psychology. For him, sense is a basic portion of perception; and, although both are mental facts, sense could not be effectively gained without the presence of perception, especially in adult life. The difference between them relies on their cognitive manners of function. Senses are simple and isolated qualities that are irrelative to each other. They include two distinctive sorts: one is the simple qualities or attributes, like hard and hot; the other is the mental thoughts that are once combined with the concepts about their relations. A feeling of "hot" should be firstly associated with a previous experience by which the concept of "hot" is distinguished from others. A hot object in the immediate nature and the "hot" stuff in the mental state could both deliver a sensation of "hotness", although the former is purely sensational and the latter intellectual. If the state of mind involves more "relations", like that of being located, measured, or compared, it can be undeniably called perception. The sensations that involve correlative relations become the "content of the perceptions," altogether with the reproductive brain-process of relations, as James perhaps uses this term to paraphrase Hume's "reasoning."

According to this, the locations of objects that have corresponding parameters in the Cartesian spatial system are in fact the magnitude of sensations of space-relation; in other words, the invisible lines that extend and connect objects. Space is thus a congregation of lines that indicates sensations of location; which means that space is perceptual, even if those invisible lines are sensible. That is the very reason for architects, who pinpoint more on location in the tectonic sense, to frequently use the phrase "Spatial Perception", rather than "Spatial Sensation", and not even including "spatial calculation."

Actually the study of philosophy and psychology had already given out definitions of sensation and perception in space quite a long time ago, when Thomas Reid (1710-1796), a Scottish philosopher, became famous for his epistemological claim:

> "The external senses have a double providence; to make us feel, and to make us perceive. They furnish us with a variety of sensations, some pleasant, others painful, and others indifferent; at the same time they give us a conception, and an invincible belief

> of the existence of external objects. This conception of external objects is the work of nature. The belief of their existence, which our senses give, is the work of nature; so likewise is the sensation that accompanies it. This conception and belief which nature produces by means of the senses we call perception. The feeling which goes along with the perception, we call sensation. The perception and its corresponding sensation are produced at the same time. In our experience we never find them disjoined. Hence we are led to consider them as one thing, to give them one name, and to confound their different attributes. It becomes very difficult to separate them in thought, to attend to each by itself, and to attribute nothing to it which belongs to the other." (*Essays on the Intellectual Powers of Man*, II, p.17)

To be more specific, sensations are the feelings immediate to organs of sense; while the ability of being aware of certain qualities of object leads to various conceptions of it, perception becomes a particular species of conception, a distinguished way to apprehend an object, a conviction that intends to give as accurate a description as possible to conception, and thus called "perception" of object.

James J. Gibson (1966: 1-6) advocates Reid's claim when he analyses that perception is dependent on conception and belief. In doing so, Gibson believes that perception can be improved by a progress of learning. In other words, if the improvement of spatial perception can be achieved by gradual enlightenment of culture and habit, the *cogito* in space is definitely not a simple product of body sense, but a changeable and intellectual work, according to the process of learning, of the subdivision with the invisible lines of space-relation.

In this sense, the concrete spatial qualities of perception of an object cover its "figures, directions, positions, magnitudes, and distances," since all of these qualities could be identified only with the lines between two spots (William James, 1901: 147). Again, spot is sensible, yet line is the relation. And position will not be available unless two lines of relation superpose each other to provide an intersection; so it is in the process of the subdivision of physical

and mental constitutes. For spatial perception, the more numerous the intersections and subdivisions, the more delicate and precise the cognition of space becomes. Accordingly, it is reasonable to say, when the first style of the discernment of divergence appeared on the painted stones of Chinese representational art, it epitomised a marvellous giant for the comprehension of spatial perception.

Being art of visual representation, discernment of divergence is only a spatial perception in the primitive stage. It discloses an immature application of visual medium to present space, yet still could not fully indicate more complex spatial composition. However, it does provide an underlying visual scheme that functions in all later transformation of visual senses into spatial representation. From then on, the upgraded encompassing visual world appears not to be tangible. It becomes an illusion that yields to the implication of visual tricks, yet they are exactly the same visual flaws that contribute to the flourish of visual culture.

5.1.2 Transformation of Visual Sensation into Spatial Perception

Ptolemy opens the inquiry and judgement of vision in his book *Optics* (c. A.D. 150). The emission of light and the grasp by eyes form the basis of Greek thought upon the mechanism of visual perception. Within this tradition dominates *Euclidean Geometry*, by which the calculations of angles and proportions between lines of triangles work as the simulations of vision. During Medieval times, vast translations of Greek philosophy from Arabic manuscripts of Alhazen into Latin texts also give western European countries a resurrection of ancient visual philosophy with a new representative of Neo-Platonism. So it is quite reasonable to find light as the key term in the works of both St. Augustine and Plotinus. During a later period, the Franciscan Order plays an indispensible part in spreading ancient visual culture. Roger Bacon, under the guidance of his mentor Robert Grosseteste (ca. 1168-1253), Bishop of Lincoln and Chancellor of the newly-founded Oxford University, delivers a first link between the renascence of Greek geometry with *perspectiva* in the twelfth century A.D. Contemporary scholar elites of him, such as John

Peckham and Witelo, dedicate to the study of classical optics as well.[75] Hume's discovery of sense and reasoning could not be an isolated incidence since he might have mutual benefit from Bishop Berkeley (1685–1753), who develops in a parallel period a challenging visual theory that can hardly be accepted by any scientific organisation of the world predominated by the natural philosophy of Newton.

The crossroad of visual theory has to wait for George Berkeley who explores new definitions for vision. In his book *A New Theory of Vision*, Berkeley claims that spatial perception is not abstract calculation of the Cartesian system, but actually the result of lively experience. Based on the cognitive experiment of those who are born blind and thus have no idea of space by sight, Berkeley finds that space to them is only a pack of thoughts and sensations that are measured by the movement of the body after having passed a certain distance. In this way, space is as equally projected into the mind as the perceptions of pain and pleasure by the human body. All the visual ideas are, accordingly, connected with tangible sensations and reasonably perceived by touch. And, with a similar idea, Condillac later even claims that the distance of vision is only "two feet" away with the constraint of the reach of the arms (Pastore, 1971: 109). It is too problematic a theory to be encouraged by its audience during that time, and consequently Berkeley's friends in Oxford University refused to add preface to the first publication of his book.

Apart from that, Berkeley brings forward great influence upon later studies of psychology and visual perception etc. According to his study, acquired sensation to object by "eye" can be apprehended in two categories: the first is primary and immediate; the other is secondary and subject to the intervention of the former. Immediate sensation could not be altered by actual changes of the physical body; it lacks significance of spatial orientation. What one can grasp in this level is in fact the nature of object, regardless of location, direction, and also the manner of being perceived. On the contrary, the second sensation relies on the involvement of the physical body. It is a physiological

[75] For the theoretical work of optics around the thirteenth century and its relation to pre-Renaissance art, see Samuel Y. Edgerton's book *The Heritage of Giotto's Geometry: Art and Science on the Eve of the Scientific Revolution* (Ithaca: Cornell University Press, 1991), and David C. Lindberg's work *Roger Bacon and the Origins of Perspectiva in the Middle Age* (Oxford: Clarendon Press, 1996).

idea which means the movement of the body could interfere with the sensation of an object when overlapping signified implications of location. This kind of sense is judged by touch, movement and the span of every foot step in a manner like discernment through ears. To push it forward, Berkeley proposes a higher-level division of sensations of an object apprehended by "sight." In this division, physiological sensations of space are still functional due to their fundamental tangibility, yet not immediately exposed to the sense of seeing; the other, which is visible, is highly vulnerable to the mediation of how an object is perceived in vision. For most ordinary people, it is the visible latter that predominates visual culture in a daily basis. Within it, all kinds of visual phenomena and pieces of representational art are the outcomes of the mentioned mediation; that is to say, the mechanism of visual perception.

Following this direction, later psychologists push forward the theory of the transformation of perception into other areas. The German thinker Konrad Fiedler concludes that what is called the external world was in fact the "result of a complex psychological process." His neoclassical-sculptor friend Adolf von Hidebrand also challenges scientific experimental methods for discovery of the mental process when he claims that the primary constituents of mental images are composed of recollected sense data of vision and the memory of touch and movement. From an art-history point of view, Austrian art historian Alois Riegl (1858-1905) deduces that the subjective ideals of value in art work rely on the techniques to make and weave, say the skills of hand. And finally, one of Kohler's followers, Rudolf Arnheim seals the dominance of psychological visual perception within the field of art with his book *Art and Visual Perception.*

What Berkeley claims is incredibly magnificent, not only because it relates vision with the sense of touch, but also that it is the first time that visual perception of space as different from normal visual senses has been understood. As the visual perception yields to the visual mechanism, the manipulation of visual media becomes not just a possible manner but a concrete fact which can be integrated into every aspect of visual art.

5.1.3 Appearance of the World and the Transformation from Visual World to Visual Field

So, to a certain extent the visual perception is "fake". Because of that, Hildebrand calls visual space and even architecture an "illusion" (Langer, 1953: 72-73). In fact, Hildebrand is the first of art historians who recognise the visual/illusory nature of pictorial space. In acknowledging the construction of visual images to a grand illusion of architectural space, he claims that the visual process is rather "architectonic," as if visually building up space piece by piece.

If visual perception, rather than normal vision, forms the basis for visual representation of space, how does it transform to illusion? To deliver a full explanation for it, it is helpful to examine firstly an example in art history. In the expedition of the birth of perspective, Panofsky has already noticed that the development of perspective, constantly irrigated by the works of Brunelleschi, Ucello and Piero della Francesca, has changed its original mission of representing the projected world; under the manipulation of Baroque illusionists, perspective becomes a tool of distorted illusion and a visual method significantly and superfluously altered to flatter particular patronage of vision, *anamorphosis*. Such perspectival projection with manageable and symbolic vision and images still has repercussions in art and architecture nowadays (Pérez-Gómez and Pelletier, 1997: 58-59). *Anamorphosis* follows strict guidance of perspectival laws, yet has weird offsprings that contrast normal appearances of vision. Why is that?

An explanation of psychology can be found in William James's study. For this great psychologist of the 1900s, the acquaintance of nature of an object may confront with difficulty that "every concrete particular material thing is a conflux of sensible qualities ... [and] some of these qualities ... being more fluctuating ... we call ... [them] its appearances" (William James, 1901: 78). Accordingly, what is perceived in vision is always the appearance of an object in space, rather than its constant nature.

Topics of appearance never fail philosophical critiques. In Immanuel Kant's statement, "for the appearance ... are in themselves real only in perception,

[while] perception is in fact nothing the reality of an empirical representation, that is, appearance."[76] Enclosure of appearance is not escapable; and this encompassing world has various appearances. Many modern philosophers add explanations to justify the co-existence of appearance and the nature of the world. Sartre oddly explains the relationship between humans and the mind, when he describes that human beings are the slaves of vision since the perception of the world is "personal" and visual images are mastered by the mind. This mind is "another being" that leaves the perceiver opaque and subordinated. Meanwhile, Lacan accounts the disparate visual experience for the result of the modification to the signifier of vision. From his point of view, human beings have to synthesise the personal visual images with social belief and intelligence. It is the whole discourse of culture which intercepts between subject and world, allowing visuality to come into being. Culture thus becomes a veil of signs that translates unmediated visual signals acquired by organs into cognitive visuality.

Norman Bryson identifies in both Sartre's and Lacan's writings a key term of vision: *visual field.*[77] This term was actually firstly presented by Helmholtz when he used it to describe perception of spatial layout in depth as a result of transformations of visual field, subject to the movements of the head (Kaufman, 1974: 233). It thus has specific meanings to differentiate itself from normal vision. While normal vision is sensible to the retina, visual field only exists within cognitive mind, transformed by "the codes of recognition," as Lacan says, acquired from social milieu. Visual field is the mental screen to be cast upon and inserted with various social signifiers.

In his book *The Perception of the Visual World*, James J. Gibson concludes a list of detailed characteristics of the visual field, comparing with those of the visual world:

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[76] Kant, I., *Critique of Pure Reason*, trans. Smith, N.K. (New York: St. Martin's Press, 1965), A493 B521. Kant's thinking on appearance of the world partly contributes to Husserl's phenomenology in which pure mind and sense are the key figures in spatial perception.

[77] Bryson, N., 'The Gaze in the Expanded Field' in *Vision and Visuality*, ed. Foster, H. (Seattle: Bay Press, 1988), pp.91-91. This expanded gaze, as Bryson elaborates, widely exists in oriental art, like Japanese and Chinese visual art. For a more detailed exploration of this penetrating visual field and its influence upon Chinese architectural space, one can go to Chapter 6, which intends to answer the feasibility of visual representation as a contributing part to the construction of actual space with pictorial ideas.

> Pictorial seeing, then, differs astonishingly from ordinary objective seeing. The field is bounded whereas the world is not. The field can change in its direction-from-here but the world does not. The field is oriented with reference to its margins, the world with reference to gravity. The field is a scene in perspective while the world is Euclidean. Objects in the world have depth-shape and are seen behind one another while the forms in the field approximately being depthless. In the field, these shapes are deformed during locomotion, as is the whole field itself, whereas in the world everything remains constant and it is the observer who moves. (Gibson, 1950: 42)

According to Gibson's explanation, visual field is fluctuating and highly dependent on the situations of how an object is being perceived. Although it is not accurate to claim that visual field is a perspectival screen that contrasts with the Euclidean visual world,[78] Gibson does contribute the idea that visual field is susceptible to deformation of vision. In another book, *The Senses Considered as Perceptual Systems*, Gibson provides further information about these two distinctive terms that sensation is the experience of visual field, and perception is that of visual world (Gibson, 1968: 235-7).

In terms of representational art for an observer, the attendance to the space pictured within actually means to perceive the space; and that which attends to the picture "with certain visual techniques" is intended to grasp the sensations of the visual field, which requires a truly pictorial attitude. This idea gives enough justification for the application of visual techniques of pictorial mind. It explains well the function of Baroque *anamorphosis* and many other visual distortions in art and architecture.

In Gibson's words, "[the visual field] seems to be experienced when one concentrates on what it feels like to see" (Gibson, 1968: 253); yet it is not part of that space which is representative of the perception of the visual world.

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[78] Panofsky has examined the tradition of the formulation of the visual field since classic optics. For the ancients the vision is not projected on a plane and judged by the length; but rather it is cast onto the "spherical veil" that imaginably surrounds the human body, and the calculation is based on a visual angle. In this sense, Gibson may choose projection as a better replacement of perspective.

Visual techniques help formation of visual field; yet in every aspect they co-exist only with picture, not with the pictorial space within it. In other words, firstly, neither perspective, foreshortening, scale, projection nor the hypothetical techniques of C-P belongs to the sphere of visual field. On the other hands, visual techniques contribute as a tool to enhance the revelation of pictorial ideas in the visual field. They help render the illusionary space in a specific way. Accordingly, spatial depth exists in the visual world, but is never presented in the visual field. In the latter, vision is always bounded, flat, "depthless", and subject to the observer's own taste.

Visual field is the "fog or darkness" of the world; and it is only some kind of vague visual phenomena projectèd into the human mind for spatial cognition to proceed with caution. That is why Descartes takes visual field only as a defective resemblance of the world. Painting is just a matter of resemblance as such. It cancels real senses of spatial depth and provides replacement. Distance, that was once manageable in the visual world by bodily movement and measurement, now has to depend on prediction in the visual field.

The mechanism of indication of spatial depth registers only when the viewer tries to compromise a flat projection with the represented object, as if a true three-dimensional extension locates where it represents in that imaginary space.

5.2 Representation of Visual Perception

In the visual field, visual perception is then a vague resemblance of the world. To describe appearances of the world through images is not simply a process of taking photos and making documentary to register a "fact". If so, what is visual art really about? What is the true meaning to concrete visual perception with certain manners of representation? The answer to these questions will lead the readers back to the original meaning of representation.

Représentation has been translated variously in English. This French word originally means "performance", as in a theatrical presentation. Going back to its origin, a Greek word for Paradigm, *Παράδειγμα*, is regarded as "to show",

"to exhibit", "to indicate", and "to represent".[79] In this sense, representation literally indicates a rule and regulation to show and exhibit; it is a projection that derives from an existing model. In other words, representation could not stand on its own behalf, since it has intents in origin. And this origin for Kant is the world that is intrinsically representational.

When Kant acknowledges the whole world as an assemblage of appearances, he also notices several levels of such appearances: "perception", "knowledge", "intuition" and, of course, "concept" or "idea" etc. An absolute judgement in Kant's mind is in fact a judgement of modes of representation: "an ordinary judgment is the representation of an object (at the conceptual level) of a representation of the same object (at the intuitive level)" (Casey, 2002: 240). Accordingly, the fundamental issue of modern philosophy is how to represent what is outside the mind as accurately as possible; and the appearance consists of nothing but mere representations. So representation is unanimous to represent everything that constitutes appearances of the world, objective or subjective.

However, representation of space is not a simple task. It is not as easy as making an object and resembling it. Other than normal demands of bodily movement and physical coordination with environment, it requires more to manipulate space with general conceptions of objects within it. One must be able to identify space with cultural and social protocols (Cassirer, 1944: 46). On the other hand, when saying A resembles B, it is not intended to indicate as strong a reference as to representation. To represent means to be a symbol of the represented, while the whole procedure is actually a denotation which is absent in resemblance (Goodman, 1976: 3-5). In this sense, Edward S. Casey is right when he explains that the twofold function of a painting is to not only serve as a sign for its represented content, but also stand in for the represented since it has become a material object announcing its own right.

Pictorial representation of object and space thus becomes an independent topic for the visual art. The mechanism of visual representation of space is, just as H.A. Sedgwick explores, intended to project a pictorial *re-presentation* as a

[79] More details of this etymology can be found in John Goodman's preface of Hubert Damisch's *The Origin of Perspective*, reprinted edition (Cambridge: The MIT Press, 1994).

visual substitute for its original object within the picture plane.[80] However, Julia Hochberg throws out two critical questions on such representational art:

> First, to what extent can pictures actually be optical surrogates for what they represent, rather than being merely interpreted as signs or symbols? Second, since pictorial information is ambiguous, what determines which of the alternatives ... will be perceived? (Hochberg, 2007:44)

With these two questions, Hochberg tries to identify central goals of the representation of visual perception. What is the nature of representational art? Does it simply intend to make a composition of symbolic forms and re-present their origins? What is more important for us is that, in aim of the pictorial space of architecture and landscape, in what manner does space play an indispensible role in the representation? All of them lead to the following inquiry: with what and how to represent the visual perception of space?

5.3 Representational Cue and Visual Perception of Depth and Distance

5.3.1 Appearance and its Loss of Depth

To answer those questions, it is necessary to go back once again to the original definition of visual perception of space.

Since the world is the assemblage of appearances that always represent any perception in the human mind, all the external objects will not firstly be acknowledged as solids which have three-dimensionality, but be perceived as complex mental images acquired by sight. These images are only of planes, variously impressed and, as they appear to the touch, tangible. The smoothness and uniformity of objects, including three-dimensionality, is only an after-

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[80] Sedgwick, H.A., 'The Geometry of Spatial Layout in Pictorial Representation' in *The Perception of Pictures*, vol. 1, ed. Hagen, M.A. (New York: Academic Press, 1980), pp.39-40. In Margaret A. Hagen's book *Varieties of Realism: Geometries of Representational Art* (Cambridge: Cambridge University Press, 1986), she explores a similar point of view of geometrical thinking on spatial representation in the western, Indian and Japanese visual arts. The application of such a geometrical thinking together with visual perception of space will be disclosed in the next chapter.

effect of the mental judgement which interconnects them. Berkeley (1972: 83-85) even broadly confirms that what has been seen in a strict sense is only the diversity of colours, not solids; he even describes the characteristics of such phenomenon: "[it] could have no idea of solid, or quantity of three dimensions, which followeth from its not having any idea of distance ... He would not ... have any idea of distance, outness, or profundity, nor consequently of space or body, either immediately or by suggestion ... Whence it is plain, he can have no notion of those parts of geometry ..." In this sense, an object is firstly perceived as plane by the immediate perception of sight. In other words, plane is the first, solid second. That is to say, no matter what one sees, solid or painting, depth could not immediately be judged because it *never* exists in the visual impressions. Any visual attempt in space shall confront the danger of losing depth impression. Accordingly, it will not be different between the process of viewing a picture on the wall and that of seeing an object in space. They are all visually planar. Anyone who wants to make spatial representation must firstly bear in mind this requirement of planar transformation. In this sense, it is not surprising that Brunelleschi discovered the visual technique of mirror to acquire an image-like construction of the gate of the Baptistery of San Giovanni in Florence: mirror is flat, so an image of architecture presented by mirror should in its nature be flat as well. In fact, the usage of mirror is not a unique activity of the west; it is also a concrete tradition in Chinese Buddhist rituals to facilitate mirror as a medium to disperse images and disclose the vehicle of Buddha.

During the progress of transforming object and space into pictorial representation, the most unaffordable loss is the spatial depth, or distance in certain circumstances. To compensate for it, all representational arts of visual perception aim to re-produce this indispensible sensation. It is the arch-scheme for visual arts.

5.3.2 Painting as the Projection of Depth

Depth is always considered as the third dimension, along with height and width. However for Merleau-Ponty, it is the "first dimension" that becomes the basis of "the reversibility of [all] dimensions."

Edward S. Casey (2002: 119-122) believes that a surface plane works as the intermission between the actuality and the representation of landscape. Without the transformation of painting, landscape and place could not even be perceivable, and they would have only existed in the mind's eye. Norman Bryson (1995: 39-40) takes still-life painting as the systematic transition from reality to simulation. By physical form it suspends three-dimensional perception; in mechanism it proposes much more immediate space that concentrates on body. In this way the viewer associates the "mirror reflection" with the image of the mind. Losing and regaining depth requires the projection of the mind's eye as well; because the representation of the former immediately leads to the deployment of the latter. Painting, in aim of compensating the lost depth, thus becomes a projection of the planar mental images that seem not to be so two-dimensional afterwards. Every pictorial element in painting has a twofold shape: that of three-dimensional object and of flat projected surface. The representation requires synthesising the loss of depth with the actual represented object, and this interplay of plane and depth is the true meaning of visual art.

Just as Rudolf Arnheim (1956: 104) claims about the nature of visual art: "... instead of proclaiming the beauty and importance of physical existence, [visual art] used the body as a visual symbol of the spirit; by eliminating volume and depth, by reducing the variety of colour, by simplifying posture, gesture, and expression, it succeeded in dematerializing man and world."

The great synthesis of plane and depth prevails in visual art. Yet, it is not the same as that of architectural drawing of construction, in which disappearance of depth in elevation shall be illustrated in alternative side-views of façade or sections. In architectural drawings, depth has by all means a definite representative constantly corresponding to it and thus compatible to Euclidean postulates. Otherwise architecture is not constructional at all.

However, this is not true for a painting of visual art. Painting does not always represent correlating substance. Landscape painting works not according to the mechanism of an architect's plan, but on the contrary compatible to the visual perception of substance. In this sense, it only leaves two contents for painting to determine: a focus in depth (how deep the pictorial space could be) and a

fixation across the field (how wide it could be). The only decision the painter has to make is how much of these two categories are to be delivered; this is the only "doubt" of Michael Baxandall (1985: 98) for the issue of painting.

Baxandall's insightful consideration enlightens contemporary studies of Chinese visual art. Following his direction, James Cahill, Wen C. Fong and many other scholar elites definitely pay more attention to compare the development of spatial depth in the western visual culture with that in Chinese visual perception. Their explorations are unlike those of Benjamin March and Wilfrid H. Wells who intended to explain a "Chinese perspective," more or less like C-P for its content, as a simulative construction of actual spatial depths. Obviously, "Chinese perspective" is not apparently efficient. Thus March calls it a primitive visual technique. However, if Chinese visual culture has long reluctance to conquer three-dimensionality, it would be unfair to take the Chinese visual representation of space as illiterate and primitive.

Chinese visual art does have underlying formal rules for spatial representation, which is similar to that of the west.[81] But these rules yield to culture and social acknowledgments that Chapter 3 and 4 have disclosed. Thus, appearance of the world, for the point of view of Chinese ancient artists, may keep its own manner when projected onto painting. Compensation of spatial depth in such kind of representation may be a different story. Compensation of depth are made up from the beginning of planar impression on surface, and delivered when certain associations are accomplished to "indicate or represent" the synthesis between planes and dimensions. Chinese representation of spatial depth requires no calculation and mathematical projection, but rather efficiently established, if and only if, upon a series of *indication* which confirms the associations in alternative ways.

This indication has been greatly emphasised in the self-referential scholar-elite painting of China which is dominated by the elite culture. As with an undeniable essence to make comment and criticism to precedent works of

[81] In Richard Gregory's opinion, only the representational art of visual perception of Italian Renaissance and Chinese painting has formal rules overarching the spatial depth. Egyptian, Byzantine and medieval Gothic art, though manipulated by geometry, still lack the formal rules to give the impression of depth (Gregory, 1973: 164). In other words, they are occupied by plane, not space.

painting, scholar-elite painting has no need to deliver spatial depth in a way to represent real appearances of space. Ideology of Chinese visual art depresses values of mimetic representation. The all-known principle of "likeness in form" has constantly been criticised by art historians throughout history on its basis of faithfulness to the represented. Representation of spatial depth and distance suffers as well. The manner of representation in presenting pictorial meaning is far more critical and important than the represented. That is why the development of Chinese representation of spatial depth of C-P has to be divided into two collective parts: for the latter paintings after the fourteenth century A.D. become self-referential signs beyond representation itself (Clunas, 1997: 18). In the same sense, Locke would be happy to take painting not as representation of substance, but as creative representation of an act of perception of substance. Painting as such is an image of mind.

During this process, painting becomes an act of creation rather than a simple duplication of real vision. Because the translation of images by social milieu is frequent and effective enough, "[t]here is an unbroken line between image as what is real, image as the presentation (not re-presentation) of what is real, and image as the meaning of what is real. Image is reality."[82] To push it forward, the translation of spatial depth into scholar-elite paintings is either depressed or subjected to the common sense of social culture. Within this visual system, "indication", not representation, of spatial depth is the only solution of pictorial purpose. Gibson (1950: 137) is insightful to conclude that all the pictorial methods that operate as signs of distance are in fact the symptomatic "indicators," not the precise geometrical correlates of physical distances.

Accordingly, Gibson notices a major question to be solved: by analysing spatial perception, what do depth and distance look like when they could not be regarded as representations of depth and distance? Or, what are the features of pictorial vision that have replaced three-dimensional characteristics of

[82] Ames, R.T., 'Meaning as Imaging: Prolegomena to a Confucian Epistemology' in *Culture and Modernity: East-West Philosophical Perspectives*, ed. Eliot Deutsch (Honolulu: University of Hawaii Press, 1991), pp.227-44. Ames's philosophical thinking is of high importance to Chinese contemporary scholar eliteship on landscape gardens, like the study of Craig Clunas and Stanislaus Fung. In Chapter 6 on the feasibility of visual representation in the garden, Ames provides an insight in that the ancient Chinese always take image to be as equal as a real *object*. This point of view can be shared throughout periods of Chinese visual culture.

normal vision? For visual art, it seems to be only a matter of pictorial techniques; but actually it involves considerable understanding of perceptual psychology in its mechanism of spatial perception.

5.3.3 Cues as the Compensation for Depth

Why is the spatial depth still sensible when viewing a picture? There must be something lying beneath indication of depth, beneath a series of corresponding compensations on that indicative surface. Since this third dimension of space is losing its retinal and mental senses in the two-dimensional image, the perception of distance has to rely on its form perception.

Remember the two categories that Baxandall claims as the only content of spatial perception in visual art: the focus in depth and the fixation across the field. In his another book *Patterns of Intention*, Baxandall further explains this system by the dichotomy of an eighteenth-century term, 'Distinctness of vision':

> 'Accommodation' refers to the capacity of the eye to change its shape in order to focus on foreground objects at different distances. 'Acuity' refers particularly to the different degrees of sensitive response at different points on the retina, and bears on degrees of distinctness across the field of vision. So 'accommodation' relates to distinctness in depth, and 'acuity' to distinctness across the field. (Baxandall, 1985: 81-82)

Gibson believes that the primary ways to perceive depth are 'convergence,' 'accommodation,' [83] and 'retinal disparity.' All of them are part of the physiological operation of the eyes. For Baxandall, painting has actually rejected all the other means of accommodation that can indicate depth, [84] except for: depicting magnitude that is known or proportioned to the known magnitude; degradation of colour; and the degradation of distinctness. Since

[83] 'Accommodation' is the adapting of the lens in the eyes to bring a fixation to a focus.
[84] Because a painting is hung at a fixed position, normally on the wall, it denies any shifting interposition or the possibility of parallax motion of vision of a moving person. Thus the composition of a painting must be treated in its own right.

the issue of colour is excluded from the study of this thesis, the influence of the other two aspects will be taken into further consideration.

For the psychologists like Gibson and Hochberg, the clue to achieving these two goals is the "*cue*." In general, any visual phenomena that indicate spatial depth can be taken as a cue, including colour sensation, hue, brightness, saturation and the different formal extent of position in the two-dimensional arrangement. It functions to identify the picture "out" of the planar surface, and fulfil its obligation to be surrogates and symbols of the represented. Hochberg has already provided a more accurate definition of that hypothetic cue, when he says:

> Because a flat picture plane can (under certain conditions) provide the eye with approximately the same optic array as does a layout of surfaces at different distances in space, it has often been concluded that we cannot sense distance directly, that we do so only by inferences drawn from characteristic signs, now called "depth cues," that can be provided just as well by flat pictures as by real space ... (Hochberg, 2007: 360-61)

Cues are able to decompose and re-organise pictorial surface, creating and indicating visible relations between individual forms. To a certain extent, Richard Gregory even announces that perception is no longer the "slave" of the presented images, because it comprehends space with active cues. Cues thus establish spatial representation, compose as kinds of visual techniques, and become the very magic characteristic of visual representation of space.

However, understanding of the function and significance of "cue" may vary according to different theories of psychology. To paraphrase what Margaret A. Hagen concludes, there are three main perceptual theories of pictorial representation: Constructivist Theory, Gestalt Theory, and Perspectivist Theory (Hagen, 1981: 7-15). In Constructivist thinking, Gregory and Gombrich, as well as Hochberg (2007: 34-36), would take the mechanism of perception as a process of knowing that is determined by past experience of the perceiver, an individual history of memory. In this sense, cue, which is extremely subjective and symbolic, exists as the remainder or the association

of memory that waits to be re-discovered by seeing and knowing the spatial depth in painting. The essence of the pictorial art in this sense is to discover the *visual schemata* and let them evolve. On the contrary, Koffka and Arnheim propose a rather independent existence of cue. For their Gestalt psychology, cue is not subjective; it is the principle of organisation of cues which is subjective. To grasp visual structural features, both the act of spatial perception and that of artistic creation require re-organising cues with a mind to indicate spatial depth. This idea identifies the function of cues within a structure of visual technique; but this structure has limitation in its cues. Actually Koffka (1935) and Arnheim do not call them "cues," but rather "constancies." The meaning of constancy is that, when viewing a projected image of an object, the observer would rather intuitionally match it with the actual magnitude of the object; which is to say, an object which is foreshortened in the distance could still have a reference to its actual magnitudes and other items around it. The object appears to retain its shape and size no matter how far it is located away from the observer, because they are associated with the unvaried identity of the object. The observer tends to ignore the reduction in the apparent size of the object and the comparison between these two sizes accordingly leads to the perception of spatial depth.

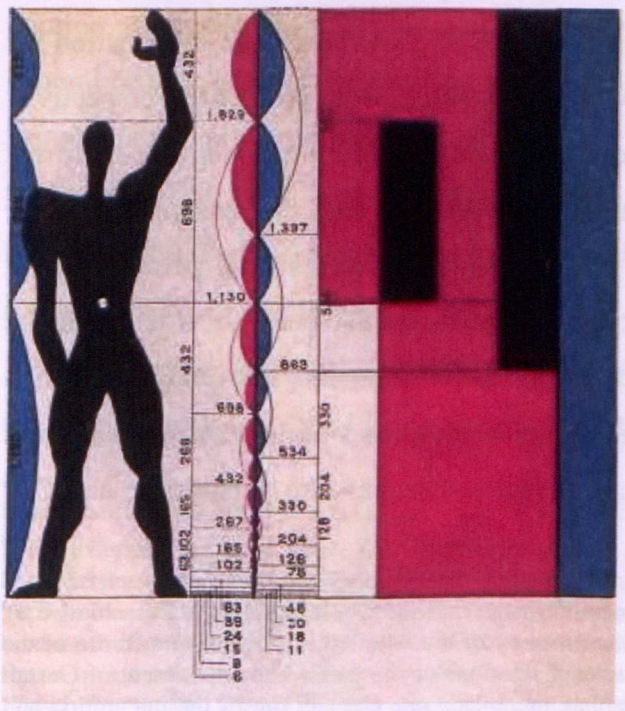

Figure 5-1 Le Corbusier's Module

Constancies can be treated as the magnitudes that are known and proportioned to those unclear magnitudes; they have lateral and constant connections with each other. Different types of constancies have been examined by M.D. Vernon (1970) into three groups: shape/size, scale, and brightness/colour. In this sense, Le Corbusier's architectural module of human body is a sound example of the constancies of shape and scale. It utilises visual measurement on the magnitude of architectural space according to the height of an ordinary height of human body [Figure 5-1].

For William James (1901: 167), these magnitudes, transmitted from the surface, derive from the different qualities of the senses which bring special "local-signs" onto the retina. Due to their constancies, momentary impressions of projective transformations of visual forms on the retina could be perceived in a sequence; after that, they are integrated by mental organisation to be an overall spatial perception.[85] Cue in this Gestalt system has an underlying structure to indicate spatial depth in which the eyes are always sensitive to the deformation of the cues. For representational purposes, "[those] depth cues are probably functioning tools" (Hochberg, 2007: 32).

Gestalt thinking prefers making groups of those forms identified by same visual schemata; this idea leads visual representation to an artful choice characteristic of a certain style. But it fails to provide enough information for those unidentified and ungrouped. To solve this problem, Perspectivist psychology seems to be a more promising trend. It not only re-confirms Gestalt thinking of cue/constancy as independent data for sensation (Gibson, 1968: 237) which helps make clear division between spatial perception and sensation, but also claims that the nature of spatial perception is about the collection of those "invariants of available stimulus information," which means the mechanism of depth cues/constancies is simultaneously apart from spatial perception. That is to say, visual techniques like perspective and C-P

[85] Terminologically, the word "*Gestalt*" means the Whole, and this whole consists of interrelating elements. However, it does not mean that the whole can simply be achieved by the sum of the components; in fact, the property of the whole has no relation to those of the parts, but rather attributes to the patterns of relations of the parts. The experiment of Gestalt psychology is mainly about how to isolate or replace one element out of the integration and identify its necessity and function. In this sense, Arnheim takes every snap shot on the retina as one element of the whole visual perception; and the cue exists in that single snap shot, while its relation to others waits to be discovered in the brain field.

belong to nothing of spatial perception. They are individual subjects of visual arts and can be manipulated intentionally. While spatial perception yields to social milieu, visual techniques are free from it. This dual separation supports analysis and application of a unanimous system of visual techniques as not only possible but critical. For, in this new understanding, spatial perception is not a consequence of the process of changing,[86] but the result of those stable and unchanged factors beneath visual representation. In other words, there is a fixed visual rule to follow.

James J. Gibson is the most phenomenal to build up this perspectivist branch of visual perception of representation. From his point of view, cues are the "formless and timeless invariants" of stimulation that participate in the entire visual transformation and perception. This manner boldly denies the possibility of what Arnheim claims about the process of integration of successive snap shots of vision, and that of, as Gombrich supports, a resurrection of past memory and experience. Gibson (1950: 138) treats cues of spatial depth in visual representation, not as a learned convention, but as the invariant properties readily utilised by the observer in the actual environment. Gibson observes that a cue is a kind of impression that makes sensory shifts in concord with the perception of depth at a contour, say profile or shape. In his opinion, those that happen over a continuous surface can be regarded as in a general sense a kind of perspective. Meanwhile, cues for depth are the visual symptoms derived from stimulation of vision, yet they are not part of spatial perception. That is to say, cue is of sensation, not of perception, and most of them are retinal. According to these "invariant" cues,[87] Gibson then makes a list of them for the perception of depth:

1. Linear perspective.
2. The apparent size of objects whose real size is known [constancy].

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[86] For example, the term "tension" is frequently used in Arnheim's Gestalt criticism of art, to describe the process to keep adjusting the spatial relation between two forms until the formal harmony is achieved. Then, one can say there is a tension in between. Spatial depth is one kind of such tension; it is derived from the configuration of multiple tensions between the forms in a continuous sequence. Arnheim's method is more obvious in his book *Art and Visual Perception* (1956), in the chapter analyzing Japanese painting. And Gibson adds accordingly a negative comment on Arnheim's method (Gibson, 1950: 155).

[87] In the later content of this thesis, when using the word "cue," it intends to have the same meaning with Gibson's "*invariant*."

3. The relative apparent motion of objects as the observer moves his head. This is often called motion parallax.
4. The covering of a far object by a near one, or the superposition of one contour on another produced when one object "eclipses" another.
5. The change in colour of distant objects, to which is sometimes appended the loss of sharp outline and detail. This is called aerial perspective.
6. The degree of upward angular location of the object in the visual field, the ground and skyline being necessarily implied as the background.
7. The relative brightness of the object
8. The relation of the lighted to the shadowed areas of an object, or shading. This is an indicator or sign, not of distance but of the depth or relief of a single object.

And he makes a note that these eight cues are rather secondary signs for the perception of depth; there are three more cues, as already mentioned in advance, that are considered as the primary cues for distance and depth:

9. The disparity of the binocular images of the object as a cue to its depth, and the relative disparities (crossed and uncrossed) of different objects as cues to their relative depth.
10. The degree of convergence of the eyes on a fixated object, the convergence being inversely related to its distance.
11. The degree of accommodation of the lens for a fixated object necessary to maximize the definition of the image.

(Gibson, 1950: 71-72)

5.3.4 The Selection of Depth Cues in Favour of Formal Inquiry

In Gibson's (1950) list, it is obvious that the last three points are about a visual study of physiology, which emphasises the involvement of the physical body to mediate visual perception as its appropriate outcome. This point of view is undoubtedly accurate under circumstances such as perception of three-dimensional space in an actual environment. It appears not so effective when appreciating two-dimensional pictorial images in which spatial depth has already been highly suppressed. In the latter instance, visual perception of

depth relies on those signifiers available only in image itself. Correspondingly, this thesis intends to focus on Gibson's first eight invariant cues for depth.

Meanwhile, enough competent observers will find other visual features as equally effective as Gibson's invariants. Among them, colour, light and shadow are the most influential factors widely considered. It is true that, in art history, light and shadow as key features in visual art have already been intensively examined by scholar elites like Michael Baxandall (1995) who delivers insights on the relation of shadows and enlightenment. One must bear in mind however that the key inquiry of this thesis is to find definite intentions to indicate spatial depth in visual representation which only regards image as a question-carrier of pure form. A further distinction between the invariants of form, colour, light, and shadow will benefit the conciseness of the main body and sharpen the key issue of the thesis as a formal deduction. In this point of view, further consideration will be taken on Points 1, 2, 3, 4, and 6 to enhance the mechanism of depth cues of form in visual representation.

Either for a single object or a whole spatial orientation of landscape, depth cues are not always coherent throughout pictorial space. As a matter of fact, the reason to deploy depth cues, not cues themselves, is susceptible to many factors, like social milieu and a symbolic idea where painting is born. If a consistent spatial recession is disfavoured, depth cues could simply be ignored or dismissed. That is why Hochberg observes in Chinese scroll painting a feature that space is "carelessly" painted without geometry and any suggestion of a single projection viewpoint. Because selected depth cues in Chinese painting have no correlating functions: one could find only a certain depth cue in one area and another in other places, while they may present different visual information. It is how visual techniques of C-P deliver primitive information of spatial depth in the Chinese visual representation.

In order to understand visual representation of space in Chinese pictorial art, one is expected to examine in an individual basis. Expectation is made on certain invariants of spatial depth without overarching rules of visual perception like that in a Renaissance painting of perspective. This expectation appears obviously and thoroughly in the examination of Chinese visual representation in both Chapters 3 and 4.

Although Points 1, 2, 3, 4, and 6 in Gibson's list are all about the depth cue of form, only Point 3 mentions movement. It seldom means that the other four lack the ability to apply to a moving process. The only difference is that, in a motion status, they will be further subjected to a more complicated perception. Consequently, Points 1, 2, 4, and 6 will firstly be examined in a stabilised environment like a painting. And a depth cue in motion is the topic for the next chapter.

5.4 Patterns of Depth Invariants: Representational Painting in a Stabilised Environment

Chapter 2 provides seven key terms used to analyse the exemplars of western art, considering their abilities to indicate spatial depth. Within this system, sector 1.2.1 firstly pinpoints the significance of form (profile, contour, shape or size with a similar meaning) as the basic invariant of spatial perception, while other sectors of juxtaposition and overlapping, proportion and scale, foreshortening and diminution go further into different applications of formal transformation. Perspective and projection have been singled out and disclosed individually; because, although they have correlative components of all the other five characteristics, they are too pervasive and accessible as the independent topics for art history and criticism to be ignored, and should thus be considered separately. In sector 1.2.3, movement is also a generous term due to its unanimous existence in other aspects. To disclose it as a single item is intended to make a prelude for Chapter 6, in which perception of spatial depth in visual representation must also be delivered in a manner of motion to "change" other formal "invariants", as well as various ways to use and view a picture in actual architectural space.

Comparing with Gibson's list of invariants, it is obvious that, except for 'perspective' and 'movement' directly corresponding to linear perspective and motion parallax, all the other invariants, juxtaposition and overlapping that are about "superposition of one contour on another," and proportion/size, together with foreshortening and diminution, relate to the function of "apparent size" and "background". Superposition means to disrupt continuity of forms of an

object; it requires no constant change in apparent size. On the contrary, perspective, projection, movement, proportion, scale, foreshortening and diminution, tend to have a gradual change in the bigness of an object. In all, although these seven key words frequently appear in the school of writings of art historians, their fundamental mechanism to indicate spatial depth in fact derives from functions of Gibson's Points 1, 2, 3, 4, and 6. Any art criticism upon representation of spatial depth must bear a basis in the psychology of visual perception. Consequently, a revisit to these seven key terms in Chinese representational art in term of visual perception is necessary, as a comparison to that in Chapter 2.

5.4.1 Invariants and Disturbance of Size/Shape: Orientation of Spatial Perception through "Window"

It is of importance to see an example as such firstly.

In inspection of Piero della Francesca's *Resurrection of Christ* [Figure 5-2], Baxandall notices the existence of several cues for the depth perception in this Renaissance painting:

1. Interposition: masking of part of familiar object by another
2. Foreshortening: familiar object at angles to picture plane
3. Discernible recession of ground plane: 'texture gradient'
4. Height in relation to a horizon: the higher the further
5. Reduction of the known size of an object with distance
6. The relative diminution of similar objects with distance
7. Cast shadows in discernible relation to the casting object
8. The modelling of volumes by shading and self-shadow
9. Degradation of distinctness or colour (reduced acuity)
10. Degradation of distinctness or colour (atmosphere)

(Baxandall, 2003: 148)

Figure 5-2 Resurrection of Christ, by Piero della Francesca. c. 1460, Museo Civico, Sansepolcro

A most obvious feature of the pictorial objects in this painting is that they overlap each other to render an awareness of near and far. The first phase of that awareness is to establish distinctions between objects and the background. When saying two correlating forms, it means their spatial relations as either departed, tangent, intersected, or enclosed. As Julian Hochberg examines, within the perceived edges, a form has a limited sphere of influence by which it maintains its direction of surface (Hochberg, 2007: 40-43). To judge the hierarchy of forms is intended to distinguish the belonging of the edge where two forms correlate. In this representation, the question to differentiate which form is the pictorial focus and which one is background addresses two major features. Firstly, *size* matters the judgement. The bigger one is normally believed to provide a background to enclose the smaller one. In *Resurrection of Christ*, the whole picture is divided into three parts with roughly equal size: sky, landscape, and the barricade. In this sense, these three parts *cannot* lead a hierarchical order of spatial depth; instead, it is the overlapping of subordinating human figures and forms of trees that make the extending orientation possible. Dark forms of landscape and the grey sky become holders for all the human figures and objects. Secondly, the interpositions of profiles of trees and the obtrusive figure of Christ successfully break the line of topological horizon, indicating that they are nearer than the enclosing

background. Step by step, the stone barricade, the appearances of Christ's feet, and under them two sleeping soldiers who break the horizontal line of the architectural structure, clearly confirm that these four soldiers are located in the foreground, and that Christ is in the middle distance.

Arnheim (1956: 83-84) claims that the mechanism of juxtaposition and overlapping is capable of establishing a sense of hierarchy by making a difference between dominating and submissive objects according to spatial depth. This method is based on the prinicple that the observer will ignore the disappearing line of the profile and make it a perfect and consistent form, the invariant of shape. And when this rule encounters the situation of intersection, it refers to the most powerful indicator of depth, the overlapping (Arnheim, 1956: 201). Thus, *shape* appears to be the second method to differentiate orders of forms. An ordinary reflection demonstrates that, when a figure is partly concealed, say at the leg, the observer will not think of seeing a disabled figure. The figure as a whole is treated as an invariant symbol whenever parts are missing from sight.

However, when two juxtaposed forms are equal in size, it becomes difficult for the observer. As both have enough invariants of size to eliminate part of one's body and preserve another's integrity, the beholder has a welcome option to decide the physical completeness of either object. As space is always presented by the background extending into distance, the deficiency to indicate the form of the background will, to a certain extent, cancel the spatial depth; and to the other extreme, if the size of an object overwhelms that of the background, as Fan K'uan's *Travelers among Streams and Mountains* [Figure 4-17] perfectly demonstrates a profile of the mountain squeezing the sky into the upper corner, perception of spatial depth is blocked intensively. On the contrary, in Chao Meng-fu's *Autumn Colors on the Ch'iao and Hua Mountains* [Figure 4-18] and in Huang Kung-wang's *Living in the Fuchun Mountains* [Figure 4-21], pervasive and unclear profiles of the sky permeates throughout the painting and accordingly provides the spatial sense of infinity.

Moreover, techniques of juxtaposition and overlapping allow for the possibility to rearrange elements and establish new patterns of spatial depth that "reveal hidden characteristics" of representation by further discovered

relationships. Take Fan K'uan's painting again for example, the image of the mountain is such an obstruction to the sense of spatial depth that it presents a striking clue for the observer to re-think the significance of such a blockage: whether or not it is a purposive manner to hide anything unacceptable and disclose something favourite. Obviously, Fan K'uan makes the observer peer within a restricted area of middle-ground and foreground where the main theme locates. In this case, spatial depth is not a prerequisite for the painting. Under certain circumstances, senses of distance can be deliberately minimised and compensated for by other visual techniques of C-P according to the patterns of the paintings. When saying "deliberately", it is different from the situation when no compatible pictorial technique is available to render distance. Here for Fan K'uan it is an intentional manner to suppress spatial depth for certain higher symbolic ideas, rather than being lack of technique. Consequently, it is absurd to take a primitive representation without spatial depth, like that of *Engravings on Changzhi Bronze Flint* [Figure 3-3], as a deliberate creation: Chinese artists during that time hardly know how to render depth appropriately. In this sense, the absence of depth in Fan K'uan's painting can be regarded as a more developed and intentional pattern of C-P.

It would be easier to take a landscape painting on the wall as the process of acknowledging the overlapping of pictorial object and background. One can of course take the wall as background, for which is an ordinary choice in daily life. Or, it is also an option to take the wall as a blockage to the encompassing landscape. Either way is fine and reasonable; the only difference between them is how to treat the overlapping relations of the forms of wall and landscape. When viewing an object of picture hanging on the wall, it tends to suggest that the man-made picture has a limited frame. On the contrary, if taking a wall as a blockage to the environment, then one has enough reason to believe that through this hollow "window" on the wall, a real landscape is right there and accessible. Under the latter circumstance, the sense of spatial depth is greatly enhanced. As Edward Casey (2002: 16) says, as landscape is in its nature a work of earth; and earth gives depth. So a landscape painting is from its beginning a work of depth. Since the "real" landscape beyond that window has in its nature a vast dimension of depth, it is obviously better to

choose the latter for a greater sense of depth, rather than the former of an illusionary space. However true it appears, still attached on a piece of surface it is.

This dual meditation of window is also reasonably noticed in term of architecture. In his book *The Dynamics of Architectural Form*, Arnheim claims:

> ... Openness could also serve as an indicator of style. In order to describe the resulting expression, however, one would have to remember that the closedness of a wall or mass obstructs our progress through space. Openness makes the surroundings accessible to inhabitants of a building and exposes them to intrusion from the outside ... As a separation of outside from inside, the wall creates an abrupt juxtaposition of the two worlds ... Openings mediate between the worlds separated by architectural barriers. (Arnheim, 2009: 225-6)

Although the term *openness* is in place of window in Arnheim's explanation, it is actually a similar manner to create an aperture out of the enclosure, strongly influenced by two different types of building: one prefers breaking a closed container, and the other keeps adding architectural units until space is sufficiently bound up. It is rather a decision to choose either wall or opening as positive and leave the other negative, while considering a similar relation of figure/ground. The difficulty in making a choice brings a perceptual ambiguity about the wall openings.

Chinese artists would rather choose "window" as positive in their art. Although pictorial objects are far from invisible, it is normally dispersed through cultural metaphors, associating art with the natural world by cultural transformation of resonance throughout cosmic-human reality and body. "Representation" functions as the medium of self-awareness for such resonance. In the context of social ritual or religious complexity, all art, including architecture, "remarks that kind of representation, reiterates it, and

... comments on it."[88] Nature is never outside human body: it is everywhere. Natural world has already made its appearance through the body; no matter how one has to hinder or manipulate the view to it, landscape is already there. And it is a "secondary" task for painters to grasp the resonance and convey part of this at-hand immanence (Casey, 2002: 95). In this sense, a landscape painting on the wall is obviously "bigger in form" than a blockage of wall. It is a similar situation for a window on the wall by which people appreciate the picturesqueness of architecture and landscape. To push this further, when viewing architecture surrounded by the larger environment, the observer actually faces a same problem: architecture becomes the figure, and landscape the ground. To look on architecture as a body or a "hole" on the "painting" of landscape is quite a burden yet enjoyment for the visitor to bear.

The usage of this mechanism is essential and frequent in the composition of architectural space, for wall is everywhere. Closeness and openness of architectural space is always a favourite topic of C-P and penetrates every stage of architectural study. Regardless of its functional and aesthetical purposes, wall can be treated as a pure technique of visual perception to either reinforce or impair the sense of spatial depth.

There is long tradition for the Chinese to record making holes in walls to extend visual perception of C-P. In *Records on Ancient and Modern* 古今注 (roughly 4th century A.D.), it describes a Chinese word for 'parapet', the "woman wall" (女墙), which normally locates at above the top of city walls. It literally means to peer, or allow peering through its holes.[89] Li Yu (李渔, 1611-1680), a drama writer and commentator of a later period, further discloses functions of the "woman wall." It is available for peering mutually from both sides; the very name, "peering," indicates a particular body gesture of young girls.[90] In the same chapter, Li Yu makes full description of how to use "holed" walls to frame and borrow scenes from outside landscape. His magic begins when he lives by a lakeside and tries to build a particular boat

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[88] Hay, J., 'The Body Invisible in Chinese Art' in *Body, Subject & Power in China*, eds. Zito, A. & Barlow, T.E. (Chicago: The University of Chicago Press, 1994), p.44.
[89] Chinese text is "女墙者, 城上小墙. 一名'睥睨', 言于城上窥人也".
[90] See Li Yu's book *Xian Qing Ou Ji* 闲情偶寄, in the Chapter "The Dwelling (居室部)", Part Three of "Wall".

with two hollow sides: two sides of the boat are covered fully by wooden cladding, while no single light is allowed to penetrate the space; the other two sides have only a wooden frame, with their upper and lower fringes curving. And Li Yu calls the hollow sides *bian mian* 便面, for it is convenient to peer out of them without any hindrance; he further claims that there are at least three benefits. First, it allows the person sitting in it to have changeable pictorial scenes outside, as in a natural painting 作我天然图画，且又时时变幻，不为一定之形; and, in so doing, *bian mian* is of competence to enclose thousands of wonderful landscape paintings within this single frame. Secondly, even the boat and Li Yu himself can contribute as a painting to be appreciated by those people who wander along the lakeside. In this way, *bian mian* works as a paper fan, to hold the scene in the boat.[91] The third benefit appears when Li Yu copies the same manner in his living room: when he notices that the rear hill behind his house is too beautiful to be ignored and wasted, he decides to decorate the window that points to it, mounting it with a paper frame of several metres, to transform the natural landscape into a borrowed "unintentional painting 无心画" that can be reached by extending hands through the window which represents the "frame" of a mounted scroll.

The three functions that Li Yu describes of his *bian mian* become typical characteristics of what C-P later means. Actually modern scholars who believe in C-P quite often quote them from Li Yu as orthodox to organise Chinese visual representation in space.

For a more natural style, Li Yu even uses branches of trees and plums to build window frames to provide more vagueness between window and painting. A borrowed scene through a window becomes a prevailing method for the architecture of Chinese garden design where C-P supposes to be. Sometimes it takes screen painting into space as real landscape. In fact, different treatments of such visual images in an actual space will greatly influence the significance and function of C-P, both of which will be examined in the next chapter.

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[91] In the same chapter, Part One "Window":
"此窗不但娱己，兼可娱人。不特以舟外无穷之景色摄入舟.中，兼可以舟中所有之人物，并一切几席杯盘射出窗外，以备来往游人之玩赏。何也？以内视外，固是一幅便面山水；而以外视内，亦是一幅扇头人物".

In all, techniques of juxtaposition and overlapping are of the most importance in creating the dimension of depth, especially when space conception depends on contour; because they make use of the simplest two-dimensional patterns that three-dimensional objects have in the visual field. They explain surprisingly all forms of C-P in the Chinese visual representation of space as particular manners of "figure and ground" relations between "wall" and "window." Spatial depth is indicated through positive and negative patterns. Other patterns that show spatial depth are of certain distortion from these basic forms. More frequently several patterns are used in composition to present the sense of pictorial distance.

5.4.2 Hierarchy of Geometry and Projection of Infinity

The feasibility of size/shape, and figure/ground in judgement of spatial depth is based on their immediate relation to forms of object. It means that objects are frontally projected according to their metric dimensions of length and width. Frontal image is the simplest transformation of a three-dimensional object into flattened form.

The key of this original transformation is *Euclidean geometry*. There are only three possible ways in *Euclidean geometry*: translation (making a copy of the figure in another location), rotation (spinning the figure around a fixed point as the centre for rotation), and reflection (mirroring the figure over a line/point). All these types of transformation keep the size/shape of the figure unchanged in almost every aspect except for location in surface so that all the other properties of the figure become the *invariants* of *Metric/Euclidean transformation*, including size, shape, distance, angle size, straightness, parallelism, length, etc. Among them, distance is fundamentally and entirely preserved.

When losing congruence in part of those aspects, invariants become less; yet meanwhile, more possibilities of transformations become available. When figures can be transformed in size according to a certain fixed magnitude of ratio as a *radial* transformation, there appears the next geometry up the hierarchy: *Similarity Geometry*. In this level, the most important feature is the possibility to present proportion/scale. Length can be multiplied by the same

positive number to expand or shrink the size according to a synchronised rhythm. Consequently, the appearances of length and area become unfaithful to the real object, yet other aspects are still reliable invariants.

Although size in this level could not be directly calculated, the variation rate of the apparent size of the figure still makes a great impact on the perception of the distance of that figure away from the observer. And it is the very reason for both psychologists and art historians to believe that: on the one hand, the size constancy keeps an object unchanged, no matter how far away it is and how severely its apparent size shrinks; and on the other hand, according to the ratio between the apparent and actual sizes which is proportion/scale, one can judge the spatial depth of the object appropriately.

An ordinary phenomenon of proportion/scale occurs when three points on the same line are projected in a parallel direction onto another plane which is not parallel to the former plane. The projections of these points are themselves on a second similar line; and this process is called *Affine transformation.*[92] It is the third type of transformation. *Affine Geometry* preserves collinearity (the quality of being constantly on the same line) and parallelism, and the fundamental of *Affine transformation* is *parallel projection*; so, orthogonal projection, which keeps the direction of its projection lines perpendicular to the image plane, is a more specific example of *Affine Geometry*.

Beginning with that, there is a fundamental difference between it and the aforementioned *Metric* and *Similarity Geometries*: the first twos only indicate the transformation of a single object from one plane onto another, while *Affine transformation* starts to consider a compositional group of objects, and within their projections a correlating visual relationships will provide either spatial volumes of objects or the distances between their locations. Both of them represent spatial depth; and both provide justification for various visual

[92] *Affine transformation* maps out straight lines as straight lines, planes as planes, parallel objects as still parallel, and keeps the ratio of two lengths unchanged. All the properties mentioned remind us of parallel projection. However, *Affine transformation* does not mean to keep a uniform scaling in all spatial dimensions. When changing dimensions with independent scaling, the shape of an object appears to be deformed. A spatial shear transformation as a particular *Affine transformation* means, for example, to transform a rectangular form into a parallelogram. And this method is intensively made use of in oriental visual art. See different types of spatial transformations in Helmut Pottman's *Architectural Geometry* (Exton: Bentley Institute Press, 2007).

mechanisms of pictorial art. Because in the pictorial art, a picture can only be taken as actual space, a projection of a series of objects in space, not objects themselves. They are on separate planes of vision.

The most distinguished feature of *Affine Geometry* is parallelism. Frequently, it occurs when objects and surfaces associate closely with their apparent sizes when viewed in the far distance, and it causes the loss of senses of distance. In daily life, the phenomenon of parallelism is easy to acquire when either viewing a planar picture on the wall in the museum, or observing landscapes and buildings from high above. In the latter situation, edges of forms of buildings seem parallel to each other. The distance between the viewer and the topology of buildings is so large that it makes parallel the directions of projection lines of vision as well. It thus brings about the second characteristic of *Affine Geometry*: optical infinity.

This optical infinity must be taken as different from that of perspective, because optical infinity means an unaccountable distance between the viewer and the surface of pictorial vision. In so doing, the visual picture, no matter to what degree the spatial depth it bears, appears to be only a surface regardless of depth. On the contrary, the infinity of perspective suggests an "illusionary" extension of the pictorial space into the surface of painting, which is in fact a "fake" distance from the surface to the imaginary infinity. The former indicates where the observer stands; the latter prefers a point of view of how far one can see *into* the picture. Moreover, since optical infinity provides parallel projection and the feasibility to embrace the overall topology, it does not matter if the picture places the eye level of the painted scenes either high above or on a horizon at the ordinary height of the human body. Additionally, if having no intention to draw all the pictorial space, the painter could simply choose which part to be tailored out. In this way, spatial depth is in principle not injured at all, and parts of visual scenes can be re-organised either consistently. It often appears in a manner like that of left to right and bottom to top, or compartmentally cell by cell, in favour of being explained according to specific cultural contexts. Furthermore, the viewpoint at optical infinity has additional consequence: the loss of relationship between relative sizes to relative distances. One cannot judge the spatial depth of an object according to

its apparent size/shape. In this visual system of *Affine Geometry*, the objects with bigger apparent sizes are not definitely closer to the observer than those with smaller ones.

In this sense, optical infinity is the critical point for the diversion between western perspective and C-P of the Chinese visual culture. As can be exemplified by either the mural painting *City of Ningcheng* [Figure 3-5] or *Stone Sarcophagus* in the Nelson Gallery of Art [Figure 4-5], Chinese visual art is always in favour of *Affine transformation*, and parallel projection. In the former example, the eye's level is placed high above the horizon of the architectural layout; and all the architectural elements are projected in a manner of oblique projection. The artist keeps the configuration of the painting in a consistent manner in order to indicate the smooth extension of architectural structure. Meanwhile, the equal division of the corridors by the pillars and along with it the patches of roof tiles suggests that there is no clear visual "slope" in the image. This means that the whole organisation of architecture intends not to deliver a spatial sense of the elements as being near to and far from the observer.

To a certain extent, there seems to be a hiding feature as well: the painter is not going to include an observer at all. It is a self-sufficient image to work on its own behalf. This characteristic is absent in the western perspective which by all means puts an imaginary eye within the picture and simulates a physiological view of space. As already disclosed in Chapter 3, "disharmony" wanders the images of architecture in *City of Ningcheng*. While the enclosure of the main courtyard is shown by an oblique projection from high above, the surrounding houses are presented in their frontal projections of profiles which indicate an eye-level on the pictorial ground. If there were truly an intention of a personalised eye, it would bring contradiction in viewing the juxtaposition of such two visual manners: the viewpoint could not be positioned high above and on the ground simultaneously. A possible answer to this phenomenon has been provided in Chapter 3: parallel projection might be a newly discovered visual technique of C-P available to artistic creation, and the application of it to certain part of the pictorial scene may help emphasise more the importance

of that architectural structure in favour of either a routine of ceremonial ritual or the grandeur of its spatial occupation.

The Nelson sarcophagus rather chooses a different manner to represent spatial sense. Very obviously, it makes use of the juxtaposition and overlapping of forms. What is different from *City of Ningcheng* is that the whole composition of the Nelson sarcophagus indicates an eye-level of ordinary people. Landscape and human figures should be viewed on the ground level, by which those forms, if not foreshortened gradually, may preserve their size/shape when stepping backward. Meanwhile, space-cell becomes a top feature of C-P for this image. Although there might be certain cultural and religious links between pairs of adjacent space-cells, their correlations, in the sense of visual perception of form, are intrinsically hollow. It is nothing of magical and delicate concealment to the demarcation in-between with energetic forms of leaves and tree trunks.

To preserve frontal profiles of elements, the imaginary eye must be positioned at an infinite distance. Compared with that distance, spatial depth in the pictorial scene of the Nelson sarcophagus is not only too limited to be sensible, but also possibly unessential for the whole composition. The Nelson sarcophagus was forged around the 6th century A.D., much later than the appearance of oblique projection in *City of Ningcheng* of the 2nd century A.D. If *Affine transformation* was already available 400 years ago, to use a simpler visual technique of C-P in the Nelson sarcophagus should not be a precarious flaw but a deliberate and purposive choice.

The tradition of *Affine transformation* as the most developed visual technique in Chinese visual culture persists till roughly around the early part of the 8th century A.D. For secular art, a first clear appearance of the disobedience to *Affine transformation* exists in the mural painting of *Yi De Prince* Tomb [Figure 3-8]; and for religious painting, the fresco in Cave No. 172 of Dunhuang grotto [Figure 4-12]. They demonstrate that, at least during the period of High Tang (712-762 A.D.), *Affine transformation* has been replaced by another new visual manner of C-P in which images of farther landscape are shrunk more severely than those in the foreground. It no longer appears to be the extending plane that *Affine transformation* suggests. Architecture and

landscape are rather projected more like those which locate in a real topological terrain. The transformation of the proportion/scale of forms is not consistent; to be more explicit, a pair of spatial depths, one in the foreground and another in far ground, will not be represented as occupying the same area in painting.

From *Metric* to *Affine Geometry*, when there are gradually more feasible manners of transformation, *invariants* for spatial perception ironically become less. Only a few factors are left for such transformation. Emerging techniques of C-P therefore mean a further absence of certain invariants. When counting in the mural painting of *Yi De Prince Tomb* the intervals between the pillars on the side of architecture, it is clear that the ratios of their projection are no longer constant.

In fact, it is a rather ordinary phenomenon in the actual space that visual transformation of the topology of buildings does not follow a constant direction of projection, because of their different locations and visual angles. It leads to a variant in the ratio of transformation in such geometry, which means a further loss of the invariant of proportion/scale. Features of parallelism also disappear in this level. The inconstant change in the ratios of transformations will make the frontal projection of surface rather elastic in vision. It is a most descriptive strain of transformation that makes surface topological. The straight lines under this transformation will be projected into curves, no longer planar and affine. That is the nature of the fourth kind of transformation, which is *Projective Geometry*. It is in its nature, for the first time, geometry of surface, other than of edge and form.

5.4.3 Perspective and Inconstant Spatial Recession: Obstruction of Infinity and the Gradient of Grid

When saying *Projective Geometry* is a real geometry of surface, it tends to indicate that in *Projective geometry*, not only the projection planes but also the projection lines are not parallel. As a projective image of form is usually comprised of four edges, two of which locate on the projection planes and another two on projection lines, the simultaneous changes on these four edges provide the surface of form an integrity of transformation, giving it a radical

topological sense. Ratio is a normal term to describe the change in size and length, but how to measure the transformation of a topological surface which may change both in length and area by different ratios?

One of the most significance is the *gradients* in the visual field, a particular set of visual structures in Gibson's theory for such purpose. Gradient can be influenced by either the ratio change of visual angle or that of distance; gradient in itself means a changing ratio. As a matter of fact, the visual phenomenon of the "slope" of a surface is the most direct and original derivative of the change of gradients. A detailed explanation of how such a gradient works in the geometrical system will need to be written elsewhere. This thesis will uphold the examining of how gradient influences the perception of spatial depth in visual representation.

Why does gradient provide so obvious an impression of spatial depth? Gibson believes that a gradient is able to give one spatial sense for a single texture, since gradient is specific to a particular slant. All the objects in visual space have textures. Texture, if viewed in a monochrome environment, can be taken as a systematically oriented matrix of lines and dots. For visual image, lines form planes; yet dots, with either a pair of dots indicating an invisible line, still underlie a similar function as lines do. In a planar surface slanted from the visual plane, the adjacent sub-surfaces (a texture formed by intersections of closed lines, or indicated by a group of dots) have a constant *cross-ratio* in their changes in ratios; that means *cross-ratio*, rather than ratio, is the invariant for *Projective Geometry*. Gradient and cross-ratio make it sufficient for the pickup of projective information for slant and relative distance; also for the perspective.

Perspective is believed to present the most visually trustable and sufficient textured surfaces that have ever been testified. Meanwhile, it has to be noticed that perspective is also the technique that has the least of the visual invariants. So in this sense, perspective has nothing left for its validity except for only a vague evaluation of being "lifelike". Perspective and its development of symbolic significance have been much elaborated by western scholar elites like Hubert Damisch, Erwin Panofsky, James Elkins, Samuel Y. Edgerton Jr., and John White. In their points of view, perspective as a specific type of

Projective Geometry has the ability of projection of infinity. But for ordinary visual perception of space and the pictorial representational art of space itself, a projection into infinity is rarely seen, even if with enough technique at hand.

In fact, in moving closer to the vanishing point, gradients of a projected size change less and less, and to the other extreme, the intention to visually notice such change is impossible. The construction of such dense but minor changes in the far distance can only be achieved by mathematics and pure *Projective Geometry*. Most of the time, such gradients in both picture and normal vision, that are so-called artificial and natural perspectives, are only presented in the foreground and middle-distance. Description of long-distance objects will fall into the work of *Affine Geometry* aforementioned. To further disclose this phenomenon, it is better to see another example of Piero della Francesca, *The Flagellation*. [Figure 5-3]

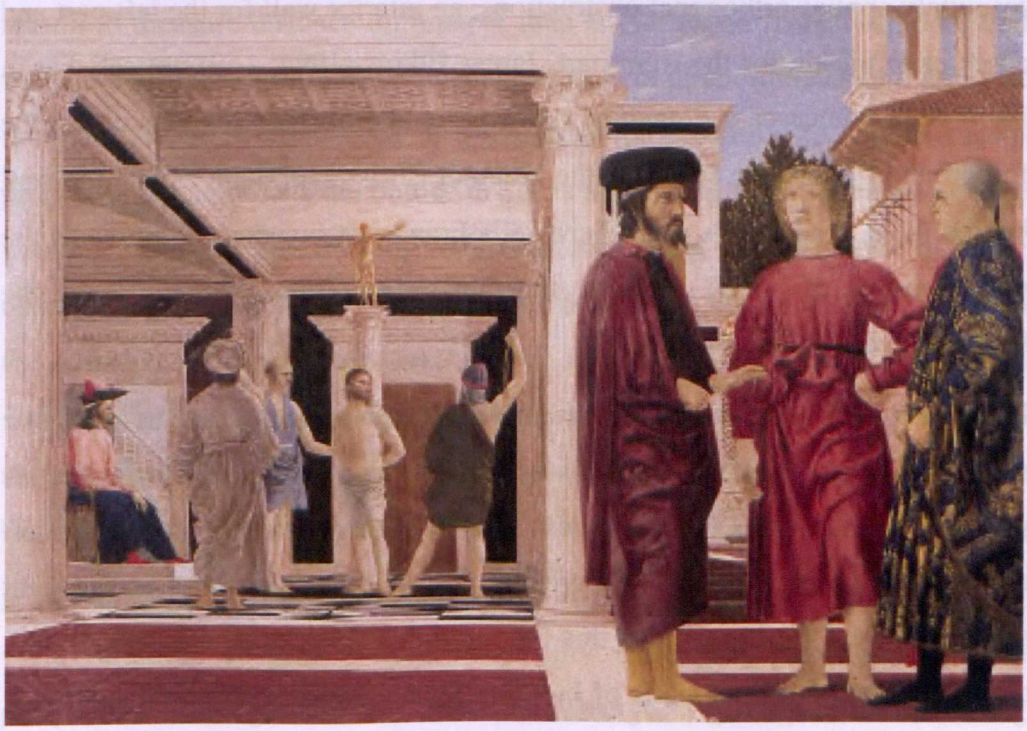

Figure 5-3 Flagellation of Christ, by Piero della Francesca, probably 1455-1460. Galleria Nazionale delle Marche, Urbino, Italy.

In this Renaissance painting, Piero della Francesca creates an orthogonal projection of urban space; however, even if Piero della Francesca himself has been acknowledged as one of the most essential artists to have the ability to

accurately construct artificial perspective, in this painting he seems unwilling to demonstrate his advanced technique, because he uses architectural elements to block the view of space where it is close to the vanishing point. In modern terms, it can be explained by a reluctance to peer into the absolute distance that indicates infinity and "despair;" but in the point of view of visual perception, the accelerating shrinkage of space in the far distance may destroy the spatial sense of any invariants, and further disrupt the perception of spatial dimension of the remainder of this picture.

It is unbelievable that Piero della Francesca appreciates the destruction of the invariants and spatial dimension (that would be too advanced a theory for him); however, he has borne in mind a fact that to render a clear spatial shrinking to the vanishing point is not only out of reach for his contemporary art technique (*minutiae* are too delicate to be painted on canvas), but also irrelevant to the main scheme that this painting tries to present. Thus, he resolutely applies orthogonal obstructions, an interior wall for the left part and an exterior façade for the right part. James Elkins (1994: 149) notices that in Piero della Francesca's *Flagellation*, there are at least four segmentations: the foreground figures, the columns, the group of Christ's tormentors, and the wall behind them. And in this way, Piero della Francesca successfully prevents the unwanted part of spatial recession and thus only presents *Flagellation* in the foreground and middle-distance.

In fact, Piero della Francesca has no intention to paint this picture as a realistic spatial composition at all. In the study of Marilyn Aronberg Lavin on this painting, she identifies two distinctive sets of space: the structures on the left represent a divine world with supernatural attributes, while those on the right stand for a real world (even in this half of the "real" world, the background, that is divided into three parts of building façade, landscape, and a side-view of Pilate's house, has rather triple symbolic ideas for the foreground figures). Between them is established a row of pillars, with its architectural style of neither ecclesiastic nor domestic, perfectly functioning as a neutral demarcation between these two worlds. Meanwhile, Piero gives these pillars of division the least effect of foreshortening, so implicit that they become nearly a single orthogonal image straight up and down. So ironically, Piero

constructs two separate perspectival spaces while using an orthogonal line to juxtapose them. The pictorial space in *Flagellation* thus seems no longer to be as unified as previously supposed.[93]

However, Piero della Francesca constructs a true integration of spatial recession, and indicates it by the gradual variation in the forms of the pavements, on both the black-and-white pavements of the torment scene and the red urban ground gridded with crossing white lines. Actually, the usage of a grid to mark pieces of texture has been utilised since the very birth of perspective, and perfectly demonstrates the gradients in the texture for visual perception of space. Both Brunelleschi and Alberti once mentioned the validity of gradients in their individual works.

In Gibson's point of view, the depth of ordinary perception in space is in its nature structured upon a matrix of a grid, because a grid is the simplest way to simulate the invariants of gradients and cross-ratios of adjacent textures. The reason to measure distance on a paper map is that its horizontal latitudes and vertical meridians formulate an unchanged system of coordinates of a grid that is reliable to be reverted back to a real distance according to certain known proportions. A topological contour map has a different grid: the density of the weaving lines indicates the slope degree of the terrain. In this kind of map, the observer has a clear sense of the changes of textures on the surface. It is also the same for Gibson in the visual perception of actual space: when viewing a variation in the texture grid, people immediately notice a change on the surface of objects, as certain parts of the object either move forward or step backward from the observer.

In this sense, both perspective and foreshortening are the perceptual results of such variation of grid texture. The only difference in-between is that perspective has a gradual and consistent change in grid, yet foreshortening may have either a tender or fierce variation, sometimes with superposition of both, yet without any detriment to its validity. Oblique projection thus can also be taken as a visual phenomenon of an object whose elements in the side-view are foreshortened by a lesser magnitude of intervals in grids. A pure frontal

[93] For Marilyn Aronberg Lavin's further study on this painting, please see her book *Piero della Francesca: The Flagellation* (London: Allen Lane The Penguin Press, 1972).

image, to the extreme extent, can be acknowledged as having a side-view as well, which has too compressed a matrix of grid to be shown appropriately.

In the creation of pictorial art, it is unusual to keep the grid always constant. To indicate a spatial depth, the matrix of "pavement" always changes in its gradient of texture in order to provide a slope on the surface. The changes of density of textures can happen either on the surfaces of a single object, or in the connecting area between two objects. The former provides the object with three-dimensionality; the latter indicates a distance in-between. And both contribute visual perception of spatial depth. For architectural representation, this visual mechanism can be equally applied to the ground pavement, the distribution of handrails and pillars along the corridors, the extension of roof titles, etc. Regardless of geometrical construction of such imaginary grids and the underlying symbolic meanings, it is rather a same manner if considering Italian Renaissance painting and Chinese architectural painting of early modern ages.

An early Chinese appearance of such variation in the matrix of grid as a reliable technique of C-P can be found again in the mural painting in the tomb of *Yi De Prince* [Figure 3-8]. The pillars on the sides of watch towers have smaller intervals than those on the front faces. So are the supporting structures, *Dou Gong* [斗拱], below the platforms. Although there is not a consistence of grid variation between the sides of two towers, they are successfully represented at the corners where the changes of surfaces, front and side, are located; and that gives the tower a realistic sense of three-dimensional occupation. An example of the failure of matrix of grid is the religious fresco *Cause of Sumati Lady of Dunhuang* [Figure 3-11]. This fresco of two hundred years earlier than *Yi De Prince* provides a similar side-view of the Buddhist tower; yet it has an unclear idea about how to deal with the change of the matrix of grid. This fresco has painted the divisions and directions of handrails in detail, but with them it fails to provide a trustable connection between the four levels of the tower. The handrails on the sides are pointing backward rather randomly.

Sutra Image of Maitreya in No. 329 Cave of High Tang [Figure 3-12] is much more developed according to its application of the grids of pavements and

structures. On both platforms of left and right sides, the pavements are projected in an oblique manner; for that, those areas on their own behalf seem rather planar even though their outer rims slope towards the central axis. It is the area along the central axis on which the true magic relies. The matrix of grid of the pavements and the formation of lotus flowers on the central platforms concentrate and thus provide a sense of the textural variation. The manner is very similar to that of pre-perspective style that firstly appears in the frescos of the Basilica of San Francesco, Assisi, where the central image of the square tile is no longer represented as a normal quadrilateral but an equilateral triangle. In Samuel Y. Edgerton, Jr.'s opinion (1991: 72), this unforeseen discovery by an unnamed master of painting truly marks the first attempt around the time of Cimabue and Giotto to conquer the optical illusion of space that is faithfully compatible with the extension of three-dimensional architecture. In this sense, the identical characteristics of Dunhuang frescos deserve a similar corresponding evaluation for their influences on visual perception.

Sutra Image of Amitā of No. 148 Cave is the summit of such primordial central perspective in Chinese visual representation of architecture. The central foreshortening of *Dou Gong* structures is realistically manipulated, far more accurately than those of the Basilica of San Francesco. However, there is no correlation between the foreshortening of each structure: the constant variation of grid texture in this painting seems to be a rigid formal scheme and unchangeable convention; all parts of side profiles are equally treated where foreshortening is needed. Obviously, the artist has no intention of providing a similar kind of unified composition as that in Piero della Francesca's *Flagellation.*

Both Joseph Needham (1971: 111-14) and Samuel Y. Edgerton, Jr. (1991: 12) have noticed the absence of scientific perspective in Chinese visual representation of architecture. Needham insightfully points out a supposition that ancient China lacks three crucial conditions for the genesis of modern science: a political aspect of bourgeois mercantile capitalism, a religious structure of "natural law" that ensures the master plan of the world, and finally a philosophical and mathematical system of *Euclidean Geometry* to fulfil the

construction of nature. Without these three conditions, ancient Chinese could not develop a deductive system of C-P of enough quantification to explicitly calculate (not demonstrate, because there are too many superior examples of ancient Chinese art for such purpose) the change of surfaces, let alone the variation of visual grid of texture gradients. Rather, Joseph Needham, as well as Benjamin March (1927: 69-72) observe that, although ancient Chinese did not see that numerical change, as well as the postulate that parallel lines meet at infinity, they actually believe intuitively that parallel lines will never meet each other. It becomes an underlying visual convention that has never been challenged; throughout history, it is thus conformity to custom that makes the Chinese art of visual representation of space fortuitously available without any difficulty.

Both exemplified Chinese frescos have several visual techniques of C-P simultaneously. The central architecture of temples provides a perfect obstruction for such a foreshortening phenomenon, forbids further peering into infinity, and encloses the foreground and middle ground of the pictorial space for the religious ceremonies. Also, a most delicate oblique projection of pavement and architectural structures has been used to present spatial depth. The mechanism of changing intervals of pillars has been fully understood to indicate the variation of surfaces from side to front; however, it never further upgrades to synthesise with that of roofs. Later Chinese visual representation seems to be more and more in favour of oblique projection rather than pre-perspective style, and consequently gets rid of any possible visual slope that extends or curves "into" the surface of painting.

Summary

The first half of this chapter intends to show differences between several pairs of terms: sense/perception, visual sensation/spatial perception, and a most essential pair, visual field/visual world. The proposed distinction has rather a vast but extensive context of both philosophical and psychological thinking of spatial perception by means of vision. All the efforts make clear that space as

that of being presupposed as objective and abstract, or contacted by other human sensory organs, is totally different from that which is seen by sight. In contrast with scientific perspective and descriptive geometry which make space detached from the sensory perception, perceptual psychology provides another persuasive way to re-think the construction of visual representation of space in painting. It is not trying to calculate or deduce a mathematical structure, but to subordinate different spatial representations as the after-effects of the intrinsic perceptual system. In this system, those normal cultural dominances are meaningless; because a pool of visual methods, as well as representational techniques, is available for all the artists, although it might be ordinary for one painter to choose one technique and disfavour another, according to individual tastes and needs. In other words, the validity of certain visual techniques is based on the physiological level of human beings, not on the subjective evaluation of the individuals. So is it for techniques of C-P.

To make a representation of visual space with such visual techniques, there is an obvious problem that representation is deprived of spatial depth. And due to the very nature of representation, there is a fundamental task to compensate for the loss of spatiality in painting. In spite of the populace of the ideas from art historians, perceptual psychologists provide a series of further explanations for the justification of all the techniques that have ever been utilised in painting in order to make the compensation of spatial depth. Most importantly, a list of cues has been given by James J. Gibson for such purpose; within it, there are at least four depth cues that are effective in a stabilised environment, like a painting on the wall.

The first examined term is size/shape constancy. This pair of cues is not only dominant in deciding the figure/ground relationship of forms which further influences the mechanism of juxtaposition and overlapping, but is also a latent factor in understanding the meaning of a "window" on the wall as either a framed painting, or just a hole to see out into the imaginary landscape, in rather a philosophical way. The second consequence of Gibson's visual system is the hierarchy of geometry. From *Metric*, *Similarity*, *Affine*, to *Projective Geometry*, the upgrade of the visual system is followed by the

gradual disappearance of invariants on which a judgement of spatial depth can rely.

Affine and *Projective Geometries* comprise the basis for most visual representational art, due to their emphasis on the correlative changes in the distances of projected images. The feature of parallelism in both geometries puts artists into a dilemma as to how to treat optical infinity. When positioned high above the pictorial ground, spatial extension is demonstrated by an oblique projection; and if placed at normal eye-level, elements will juxtapose and overlap each other, and spatial depth concords with that of space-cell in the figure/ground relationship. From *Affine* to *Projective transformation*, there is a further loss of the invariant of proportion/scale. In the latter system, the only reliable invariants are gradients and cross-ratio of textures. For both pictorial creation and psychological study, a matrix of grid has been used to provide such invariant of texture. However, it is not true to acknowledge this as a complete success of *costruzione legittima* of space, as both Piero della Francesca's *Flagellation* and the Chinese ancient visual transformations of architecture forbid the extension of optical infinity. Instead, utilisation of a matrix of gridded texture in both examples is either secondary to symbolism in forms of space or without ideas of scientific construction. However, gradient of grid greatly enhances the effect of spatial depth in the projective transformation of space.

As can be seen in Gibson's list of cues, Point 3 of motion parallax is still a questionable technique. It is due to the fact that, when movement is involved within the spatial perception, the mechanisms of all three aforementioned invariants in a stabilised environment will be inefficient, subdued or even cancelled. Admittedly, a two-dimensional image, however realistically it resembles the actual space, is still an appearance on a surface. It is still quite different from that when walking through space and appreciating the perception of distance. Further explanation of depth cues of motion will thus be delivered in the next chapter; in so doing, it is expected to have a conclusion that the full meaning of visual representation of C-P yields to the manners of how one sees and uses it in actual space.

Chapter 6 Visual Schemes of Body: An Alternative Explanation to the Multiple-Station-Point System

> *... Every total form as picturesque which, even when it is at rest, yields an impression of movement. The notion of movement, however, belongs too to the essence of painterly vision: the painterly eye perceives everything as vibrating, and suffers nothing to settle into definite lines and surfaces.*
>
> ------- Heinrich Wölfflin (1929: 26)

To take kinds of visual invariants as purposive patterns of spatial depth also means to correlate them with particular contexts; in other words, the application of spatial invariants is never rigid. For instance, what Baxandall proposes about series of depth cues in Piero della Francesca's Resurrection of Christ [Figure 5-2] must be associated with the painting itself for the justification of each cue. Interposition of part of the body may still not be enough to indicate spatial recession if comparing it with Cezanne's watercolour of a woman's figure, as Arnheim discloses. Again, to acknowledge a reduction of the known size of an object as a feature of distance may also find being cheated as far as modern application of visual illusion is concerned. In fact, examination of spatial depth in particular visual evidence is a process that not only discovers fundamental significances of form on the psychological level, but also associates them with pictorial "events," taking them as "objects" that yield to specific themes and concepts, and the further iconological "synthesis," all of which Panofsky urges to pursuit as the essence of iconological study.

Actually, the latter part of the last chapter has already begun with such a methodology when it intends to disclose visual perception of C-P in a stabilised environment. Its nature is to firstly grasp the visual 'invariants'.

However, in the actual space, it is not so easy to discover the invariants if, regardless of specific themes, neither is available to find them non-subjected to the manner in which the beholder might treat them. One has to accept that, to find potential and purposive depth cues, it is necessary to put specific evidences into inspection of visual scheme, whether it is subjected to a geometrical, political, or philosophical thinking.

To take C-P of the Chinese visual representation as a way of geometric construction firstly seems not a good option since no systematic knowledge of geometry and mathematics is ever at hand. However, when acknowledging that Chinese ancient artists always put artistic representation of space into a continuous movement of seeing, viewing, reading and evaluation, a "pseudo-geometric" method may cast new light upon the manner of how to appreciate functions and meanings of C-P within a process of bodily movement. This pseudo-geometric thinking does not rely on a thorough construction of vision, but rather transforms C-P into a diagram. Based on it, Chinese ancient artists may deploy potential depth cues in a particular formation to render spatial depth. Those formations may be called the "visual schemes" of C-P.

To continue with what Chapter 5 has reached in the hierarchy of the geometric system, it is now time to disclose what has been imposed in the so-called "continuous movement" of seeing in the geometric sense. Such a movement is believed to have compelled the application of the multiple station-point system of C-P. Can this multiple station-point system still be a purposive pattern of pseudo-geometry for C-P? How can this system provide visual schemes with justification for the senses of depth cues? It is expected to be answered accordingly.

6.1 Alteration of Geometrical Invariants: Station Point as Visual Direction

Last chapter concludes that visual representation of C-P may have several potential 'indicators' of spatial depth in various situations. In a framed and stabilised environment where images are treated as unchanged, the observer

may regard the whole image with a grand visual scheme that waits to be visually discovered. This scheme of perception is reasonably geometrical due to the function of representational skills: it intends to translate the existence of spatial depth as the after-effect of visual invariants. In an opposite case of motion, it is rather normal to believe that, if these invariants are altered, it may contribute to the perception of changing depths in a geometrical way. It requires the entire system of visual indication altering its spatial distance between images and the observer constantly. In a stable system where physical distance between image and observer is crystallised, such a kind of geometrical alteration relies on a movement of station point (where the "imaginary" beholder stands against the image).

On the other hand, as Chapter 3 has already explained, 'reading' an image in Chinese context is consequently critical for the evaluation of visual representation of C-P. It involved intrinsically a movement of the head/eye; to a larger extent, appreciation of visual representation in an actual space intrigues bodily movement. This belongs to a system of physical change in location; and it normally has two correlative reasons: sometimes the beholder may wander around the visual representation in aim of more detailed observation; meanwhile, it is also understandable that visual image itself, when displaced in an open ground, may induce such physical movement in a more sophistical way. Both situations underlie the manners of how ancient Chinese use visual images. It is more than a story of beholders' curiosity. The second part of this chapter is about to examine the mechanism of physical movement during a process of C-P, and it insists on a point of view that the deployment of such a visual representation of C-P in an actual space is not precarious but intentional, not additional but essential.

This chapter includes two possibilities of visual perception: that when the image 'moves', not the observer; and that when the observer moves, not the image. Both two manners are rather well-accepted by Chinese ancient society. They deny a neutral status of visual invariants, and bring more suspicion upon cultural influence. Movement as a critical technique of C-P thus provides new possibilities of presenting spatial depth on a two-dimensional surface, in a more changeable and dynamic way.

6.1.1 Geometrical Station Point Options

Wölfflin explores Baroque architecture as that a painterly visual perception of solid sculptures and three-dimensional space results from the illusion of movement. Contours and volumes of objects are annihilated, no definite boundary area is conceivable, and a constant variation correlates. Wölfflin notices that from any viewing direction one can see multiple images simultaneously. For example, images of half-frontal projection and of half-foreshortening together let the object to be rounded. It can be also explained as each face has its own station point subject to certain visual technique. Baroque image always has multiple station points, and "the more manifold they are … the more painterly the building is considered to be" (Wölfflin, 1929: 64).

Station point fertilises western visual arts. The most explicit example of such visual phenomenon is the perspective of Renaissance. It presupposes a central projection point where viewers stand, while the eyes determine the height of the horizontal lines where a vanishing point is located. The perspectival system as such has only a single station point. It brings improvement to visual perception because it chooses central projection, comparing with affine projection that medieval arts privilege. And Baroque visual tradition further supposes a revision to its Renaissance precedent, a modification from single to multiple station points. In this sense, psychologists of visual perception like Prof. Margaret A. Hagen can claim an insight that, in terms of artistic creation of visual representation, a painter of Baroque is in fact selecting appropriate geometrical systems of visual invariants and station points to balance the emerging demand of three-dimensional pictorial space (Hagen, 1986: 113).

Accordingly, Hagen enlists the visual features for four styles, as follows:

Table 2 Redrafted according to Four Styles: station point options (Hagen, 1986: 114)

Style	Number	Distance	Angle	Lines	Planes	Geometry	2D/3D
European	S	Middle	Oblique	Convergent	Intersecting (Parallel)	Projective (Similarity)	3D
Egyptian	M	Optical infinity	Frontal	Parallel	Parallel	Orthogonal	2D

Northwest Indian	M	Optical infinity	Oblique	Parallel	Intersecting	Affine	2D
Japanese	S	Optical infinity	Oblique	Parallel	Intersecting	Affine	3D

In Table 2, Hagen makes a comparison between European (post-Renaissance) and Japanese art, indicating that both have a single station point and an oblique angle of view in aim of three-dimensionality. However, the geometric system of the former is Projective (Similarity) Geometry, the latter Affine Geometry; on the other hand, projective lines are convergent in European art but parallel in Japanese art. Renaissance projection of perspective in art has no intention of achieving optical infinity, fearing to destruct visual invariants for spatial depth. Yet, in Japanese art, one can hardly find a similar purpose.

Traditional Japanese art in Hagen's opinion is an affine-geometric art due to the features like intersecting planes with parallel projection lines and a single station point. By stating that planes intersect, it means the picture plane is oblique to the general surface depicted. Parallel projection lines maintain the properties unaltered in their relative sizes. They are compatible with the assumption of the single station point as this station point is located at optical infinity. Affine projection is ensured by then.

One may assume that there would be multiple station points in Japanese art as in Chinese visual representation of C-P. The question actually depends on what subject pictures intend. If an image delivers symbolic scenes in a narration, just like the story that Ku K'ai-Chih depicts [Figure 4-4] in which identical human figures appear in different parts of the same scene, it implies the image as a composition of multiple station points. Japanese painting of Figure 6-1 presents a hilarious ceremony. It is intended for a realistic scene of a city landscape, rather than It has a thinking of symbolism in *The Water Mill* [Figure 3-21], which juxtaposes architectural structures in a sequence that follows the procedure of making flour out of grain. Realism in may prefer a station point to be high above the pictorial plane, rather than in different

places. Projection lines for architecture are parallel, not convergent. So it is ordinary impression with no size diminution.

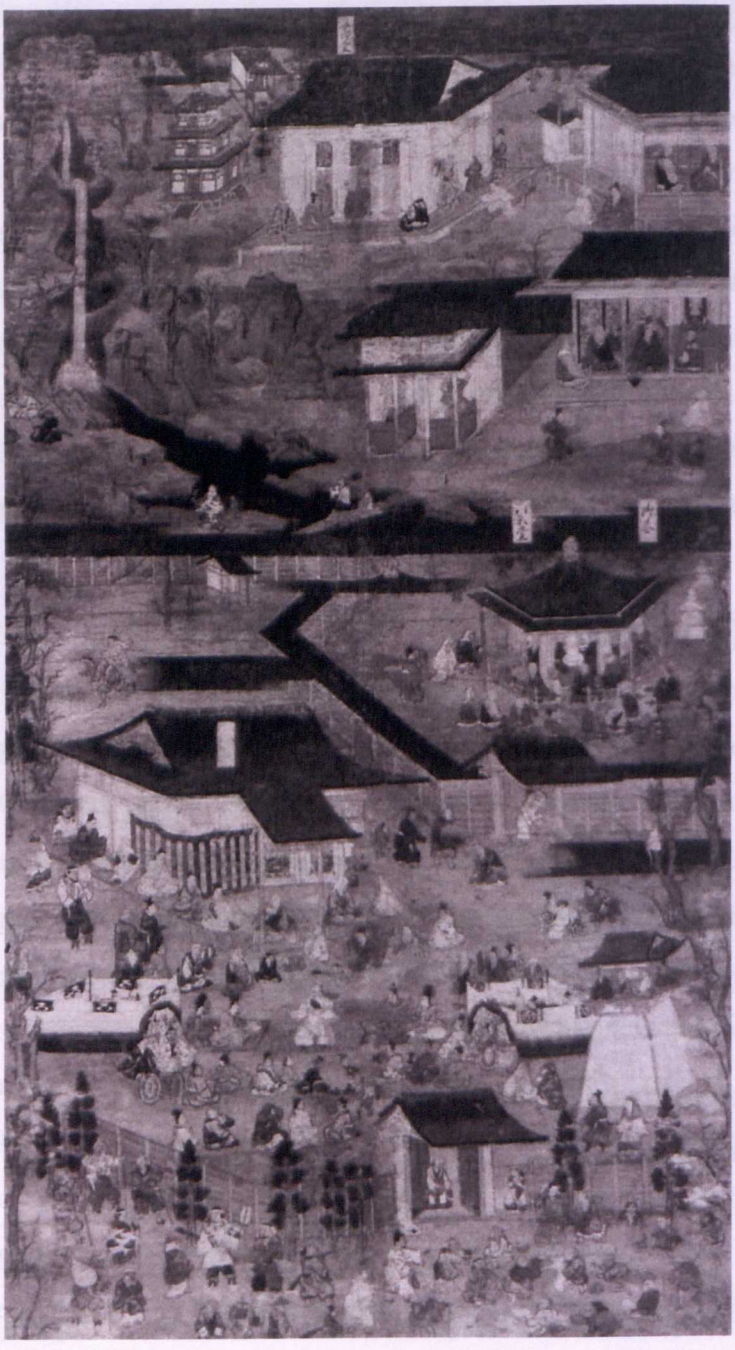

Figure 6-1 Foundation Ceremonies of a Buddhist Temple, Eugene Fuller Memorial Collection. The Seattle Art Museum

An alternative explanation to maintain images of architecture attached to parallel projection is to keep their station points at infinity. If there are truly multiple station points at work, it would be reasonable to say all these points are located at infinity in the same manner. And this brings a dilemma of how

can one make discrimination between them if their identical location of infinity overwhelms any distance between each other. Affine system would deny the possibility that when standing high above on the roof of a high building and viewing below onto the parking lot, one has to move a same distance as that from car A to car B in order to conceive of parallel projection of the images of both cars. To differentiate viewpoints on the high roof is meaningless.

In this sense, James Gibson seems to be wrong when he explains Japanese parallel perspective as an alternative of lacking a fixed point of observation. Single station point does exist in it, yet locates at infinity. Deduction of Hagen on Northern Indian art may also be inaccurate for her claim of the co-existence of multiple station points at infinity. Hagen's fault is partly because she has worked with an unjustified condition that the primitive Indian art would have a geometrical purpose as well. In fact, to analyse religious and symbolic images like ancient Indian art and Chinese Buddhist transformation, geometrical thinking may find itself a feeble option. The pictorial composition of art as such is based on the efficiency of communication of religious information, rather than provision of faithful depiction of geometric space. The mistakes of Gibson and Hagen can reversibly demonstrate the fact: that it is impossible to deploy multiple station points at infinity for a representational purpose. An art of this kind does not exist at all.

Admittedly, station-point system seems to have also taken a premise that an observer is secured for visual representation. It simultaneously presupposes the prevalence of geometrical thinking. However, it does help to interpret mechanisms of primitive art, not of accurate calculation like artificial perspective, but a mode of indefinite *Affine* system. In such a system, pictorial translation relies on no Euclidean postulates but simplest formal manners of parallel projection lines. The mechanism as such is like a production of mapping. In it, station point can suggest a direction of vision.

Chinese visual representation of C-P for landscape has the very feature of primitive mapping. In this sense, it should be simply available to *Affine* system. Although Hagen does not enclose Chinese visual representation within her system of geometry, she does mention several visual features that shall

bring new ideas to evaluate the visual analysis on Chinese exemplars of C-P. She identifies a mature application of visual techniques in Chinese landscape painting actually marks the "breakdown of a consistent *Affine* style" (Hagen, 1987: 149). The most identifiable technique in later Chinese landscape painting is the correlating size diminution starting from the fresco in Cave No. 172 of the High Tang period [see Figure 4-14]. In it horizon is sensible, although still far away; because the station point is once again pulled back down to a more ordinary level, losing its uncompromised infinity. When close to the ground, the distant horizontal arbitrarily concludes the final disappearance of the landscape. Affine Geometry thus becomes inefficient to indicate pictorial space extending endlessly; size diminution becomes a rather reasonable choice, making foreground elements overlap those far away. This change is not an option but a prerequisite.

A diagram in Figure 6-2 addresses with details to differentiate affine and non-affine systems. The system of the station point option clearly explains the transition of C-P in the Chinese art from the oblique projection of architecture of the Han to the foreshortening abundant in the mural paintings around the Early Tang. It demonstrates a struggle of artists to deliver more realistic representational art. Those in early periods have primordial sense of mapping projection instead of spatial enclosure. Chinese landscape painting in its early stage has the similar expedition when station point moves forward from optical infinity. This change leads to the transition of C-P in landscape painting from *Affine* system to Projective system. During this process, scenes become more stratified, forms of figures diminish into the distance. However, magnitudes of these diminutions confirm no consistent ground plane; it seems that the compartmentalizsd grounds are waiving up and down, juxtaposing each other without a topological sense (see Figure 4-13 for instance).

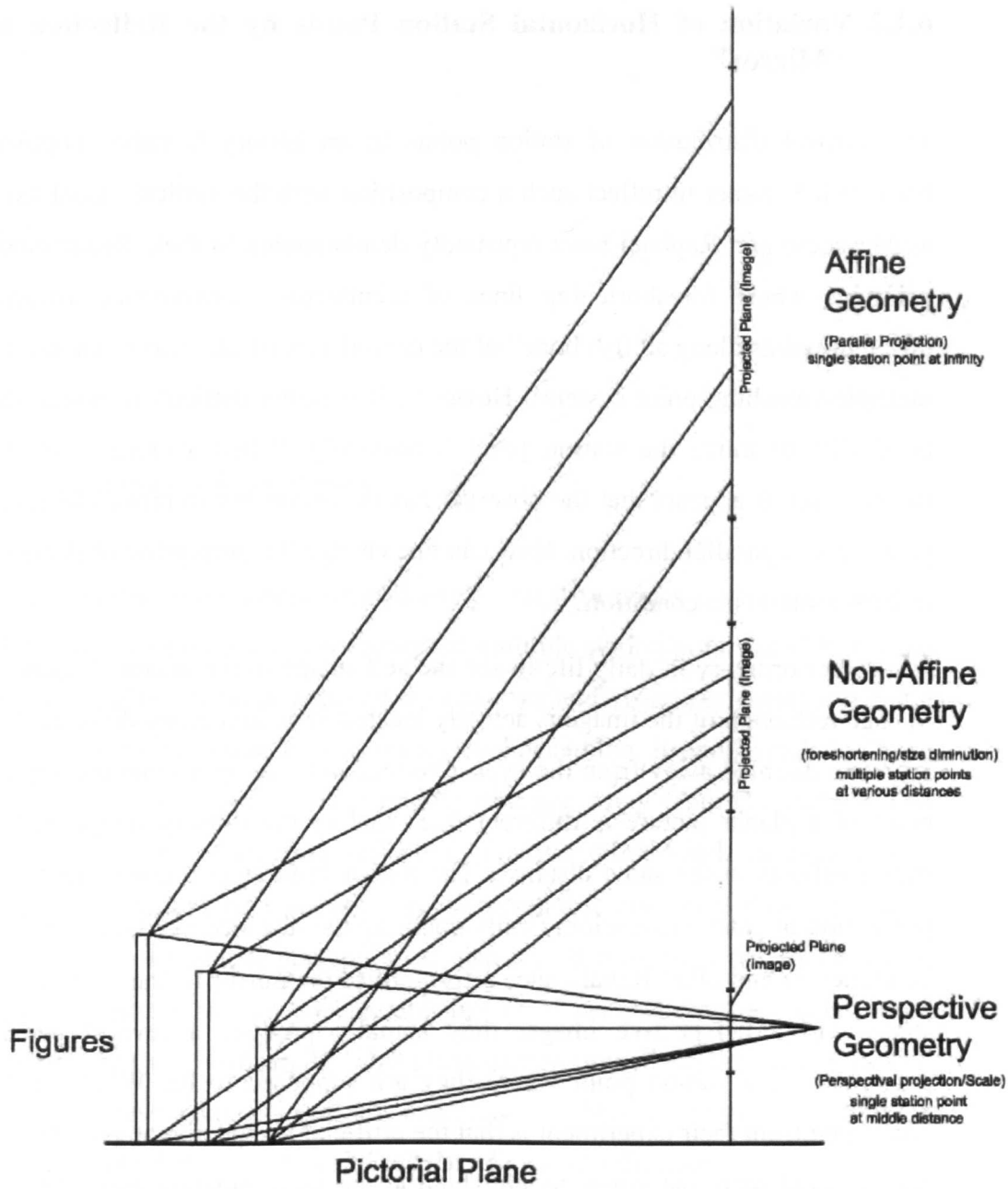

Figure 6-2 Three Systems of Geometry, duplicated and revised according to Hagen's analysis (Hagen, 1987: 157)

Inconsistence of pictorial planes on the "ground" provides no definite station point; yet, if considered in another point of view, it has new possibilities for coming up with multiple station points that can be distributed "randomly." This phenomenon is actually the second manner of station point. The indication of such distances concords not with the placement of station points in the vertical direction, but with that in a horizontal plane. The reasons for such mechanism are rather not of geometry but of cultural understandings.

6.1.2 Variation of Horizontal Station Points by the Reflection of "Mirror"

The vertical distribution of station points in art history is rather popular, because it is easier to reflect such a composition with the vertical visual axis, as Masaccio and Raphael have repeatedly demonstrated in their Renaissance paintings where foreshortening lines of architecture convergence towards different points along a "fish bone" of the central axis (it can also be called the multiple-vanishing-point system). However, it is rather difficult to notice the possibility to move the station point horizontally. When a distance to the image is set, it appears that the observer has no option but to move along the painting in a parallel direction. How can one change the perception of distance in such a stabilised condition?

It is rather ordinary in daily life to see the self-image in the mirror [Figure 6-3]. The reflection of the image is actually located at an imaginary distance that has been doubled away from the eyes. Consequently, to appreciate the station point of a planar picture is different from that of the illusory image as the mirror reflects in the same distance. The mirror introduces a complementary perception of spatial extension, firmly doubling the distance magnitude. When Brunelleschi and other Renaissance artists utilise the mirror to frame an actual space into a perspective image, they actually produce a revised distant perception of a station point where they are supposed to be. What can be confirmed from their experiment is that the artificial perspective it generates is not identical with that when people stand at the same position and view the architectural space. It is not only because the mirror has transformed the actual space into an illusion, but also due to the fact that the double-reflection of the two mirrors through which artists "see" perspective has already presupposed a slight change in the distance between the station point and the object depicted.

Figure 6-3 Mirror system and reflection

Such minutiae may hardly be noticeable, but it provides a very fundamental idea about the horizontal distribution of multiple station points of C-P. On the one hand, if the distance between the observer and visual representation is too far, the mirror would be useless for a visual deception. Brunelleschi must have placed his station point in the middle distance away from the cathedral to ensure a feasible mirroring reflection. On the other hand, as each mirror associates an imaginary station point, a system of mirrors is thus capable of bewildering the spatial perception of distance. Brunelleschi has made use of just two mirrors for the great establishment of perspective; by placing more will one destruct it ironically. This phenomenon prevails in the manner of C-P in the Chinese ancient visual art, especially for *bian xiang* of transformation which turns religious stories and secular scenes into illusions.

Since the Han Dynasty, the Chinese representation of C-P in a way of the mirror has associated with symbolism of cosmos and images of ceremonial processing. It even involves a daily game board (Lilian Lan Ying Tseng, 2004). Eugene Y. Wang (1994) believes that *jian* 鉴, the ancient Chinese character for "mirror," is connected with both "reflection" and the act of "looking into." During early periods, to composite pictorial space with a mirror is rather like to paint architecture and landscape on stones, bricks and rocky flints. The manners of C-P to appropriate perception of distance in those early arts are following the rules of planar distribution and distinctness of direction. Yet it has appears simple and of no complicated visual manners.

However, in the caves of Dunhuang Grotto, numerous examples of mirror reflection have partaken to transform the spatial perception of visual representation. Wang firstly discovers that religious transformations may not be identified exclusively as unchanged when projected into the mind of practitioners. When reciting Buddhist sutra and sitting in the middle of the shadowed caves, monks are inclined to concentrate thoughts and obtain the dreamy vision of Buddha, analogous to a "mirror reflection." In order to exaggerate such illusory effect, a mirror is usually placed in front of the practitioner to enhance the concentration and compose the mind. Possibility is that maybe not just one mirror are involved, but sometimes up to eight or sixteen standing straight up around the central platform as a formation of reflection. This formation indicates particularity of architectural space of "mirror hall," which often appears in medieval Chinese sources. A reverent monk Fazang (643-712 A.D.) once made an installation of ten mirrors:

> He took ten mirrors and arranged them so that one occupied each of the eight compass-points, with one above and one below, in such a way that they all faced one another, a little over ten feet apart. He then placed the figure of a Buddha at the centre, and illuminated it with a torch so that its images were reflected back and forth. Thus his students came to understand the theory of passing from 'sea and land' [the world] into the [world of] infinity.[94]

Mirror formation creates illusionary space and blurs perception of spatial depth, especially when two mirrors face each other and make reflections back and forth, and extend into infinity. Buddhist practitioners presumably do not view the religious frescos and wall paintings directly; rather, they observe illusory representation repeatedly through the mirror formation, leading the conveyance of the Karma spirit and recalls Bodhisattvas 菩萨 to defeat evil forces. Furthermore, it is believed that such kind of mirror utilised in ancient

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[94] T50:732ab; trans. from Joseph Needham's book *Science and Civilization in China*, Cambridge, 1954–2000, 4.1:92. Quoted by Eugene Y. Wang in his paper *Oneiric Horizons and Dissolving Bodies: Buddhist Cave Shrine as Mirror Hall* (Art History 27, no. 4 (2004): 494-521. Special issue on Visual Culture.) In this paper, Wang demonstrates the formation and religious context for such mirror installation.

Chinese caves is of no similarity to a modern plane-glass mirror as that of Brunelleschi. Ancient people prefer convex mirrors made of bronze to help their imagery concentration of surrounding paintings. A convex bronze mirror does not reflect the mirror-image in a way that plane glass does; it transforms images into a formless sheen of colours. Spatial depth is altered and imperceptible. Only in this manner does it fulfil the transformation of the visual field; and images on the cave wall become the representation of representation, a phantom without fixed form and structure. Thus, the procedure of spatial perception of C-P as such actually begins with looking into a mirror.

In fact, medieval monks not only conduct religious doings with the mirror, but also depict scenes of how mirror is utilized in visual representation. In the fresco of Cave No. 31 of Dunhuang Grotto [Figure 6-4], to the left of the Buddha there is a man sitting in front of a rectangular mirror; further left two other men are facing a similar mirror, with another one by their sides. In the secular point of view, it is more popular for imperial families through the Sui, Tang and Song Dynasties to install bronze screens of mirror: whereas painting can only present one image, a mirror is able to capture more real images through time [Figure 6-5].

Figure 6-4 Practice of samadhi in front of a mirror. Detail of the Lotus Sutra tableau on the east ceiling slope of Cave No. 31 at Dunghuang

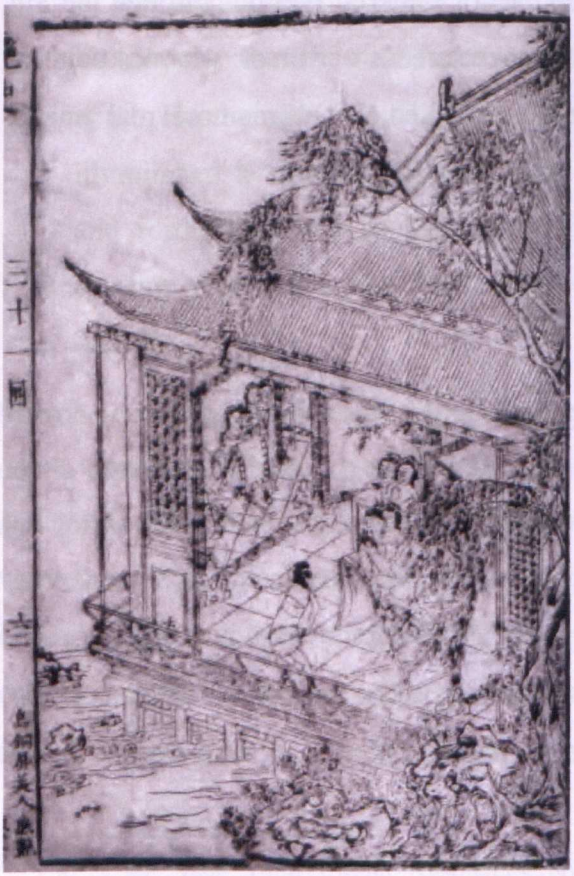

Figure 6-5 Sui Emperor Yang's dalliance in the mirror hall of the Labyrinth Tower. Illustration of Chapter 31 of the Sui Yangdi yanshi (Amorous history of Emperor Yang of Sui), 1631. Courtesy of Harvard-Yeching Collection, Harvard University

Mirror is fully appreciated in ancient Chinese visual representations of C-P to capture images. It either creates reflections of station points and thus becomes an indicator of visual direction, or bewilders spatial perception of depth by multiplying its reflections. As Figure 6-5 has shown, it is usual to place in the interior space a mirrored screen as a decoration instead of a wall painting or the enclosure of furniture. Ancient artists sometime make alternatives to build reflections of mirror into particular screen painting. On the surface of this screen paints an image that resembles to see into a mirror. It has realistic spatial configuration of human figure and architectural enclosure. The pseudo mirror-reflection on the screen does not stop here. Some exemplars show a clear intention to engrave both the scene to be depicted and the mirrored images of it within a single representation. This mechanism enhances C-P with further blurring to the perception of real spatial depths and locations of station points.

It relates to what Wu Hung has discovered, the *Double Screen* phenomenon.

6.1.3 Representation within Representation: The Double Screen

Hubert Damisch in his book *The Origin of Perspective* insightfully notices in the Renaissance visual discovery a demonstrative aid that the mirror offers to replace the rational construction of an object with a planar resemblance to it. He identifies that a single mirror is also insufficient for the approximate transformation of the observed. Since a mirror can only reverse the image in front of it, Brunelleschi certainly has to reverse the reflection twice with two mirrors facing each other, in a manner of a *di-monstratio*, a double showing (Damisch, 1994: 63-64). Brunelleschi's double-showing project is just like the installation that Fazang makes with the two confronting mirrors capturing the bouncing reflections endlessly. In each mirror one sees images of both mirrors simultaneously.

If taking the physical body of the actual mirror as a screen painting to frame the illusory three-dimensional space, it is regarded as if this space had been subdivided into parts by mirror reflections. This image of reflection has been greatly nurtured and integrated by C-P with screen painting, which usually stands behind as a background decoration. Physical forms of screens

contribute to the segmentation of space and forbid penetrating sight to the back. In the meantime, the "mirror-reflection" painted on screens replaces it with an illusionary distant view.

In a screen painting of 10th century A.D., Wu Hung (1996) identifies a weird visual phenomenon: a screen painting that lies behind the gentlemen playing chess resembles the represented architectural enclosure [Figure 6-6]. This tricky composition actually introduces several parts of a pictorial space within a single visual image.

Figure 6-6 Double Screen, attributed to Zhou Wenju 周文矩, around 10th century. Freer Gallery of Art, Washington, D.C.

Observers of this painting will confront a difficulty in the design of spatial depth. The whole visual system actually involves four compartmentalised but correlated spaces: the domestic space between the observer and the painting observed; the represented interior space in which four gentlemen are sitting around the chess table with a waitress standing by to serve; a feminine space on the secondary screen painting indicating the scene of life with one man and four maids; and the last one, the screen of landscape painting depicted on the screen painting aforementioned [Figure 6-7]. While it seems readily to distinguish the first and the second spaces, it would be rather impossible to differentiate the second and the third. To identify which one is the represented

or the representation cannot be done unless a physical frame is secured. Since the third space can be taken either as the mirror-reflection of the second one, or simply as a representational image as those of the second and fourth ones, observers lack the ability to remind themselves where the extension of space stops (although one may be aware of the differences in their subjects, it is not so when judging credibility of space). When viewers struggle with confusion and finally succeed in claiming the feminine space is actually an illusion, they may have overlooked the fact that it is only a representation within another larger representation. The artist thus creates an illusory spatial structure by means of mirror-reflection installation of screens. To appreciate this, one is subject to a cultural insight to take the subjects and relations between these four spaces as both metaphoric and rhetoric; and it thus accomplishes perfect illusionism and sacrifices clear perception of spatial depth. Fazang is supposed to have followed the same manner when he installed mirror reflections to provoke enigmatic power of Buddha.

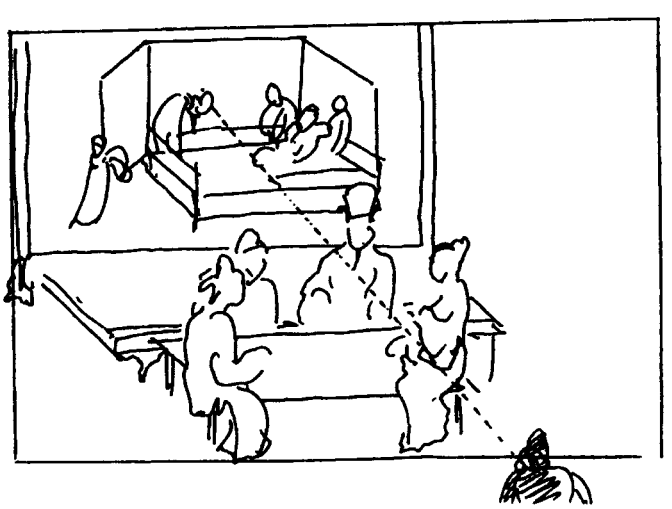

Figure 6-7 Analysis on Double Screen, hand drawing by Wu Hung (1996: 71)

Liu Guandao's painting provides another example for the double-screen as a visual phenomenon of C-P [Figure 6-8]. A gentleman is leaning on the bed. Behind it is a screen painting characteristic of a mirror-reflection. In this sub-representation within representation, a literate scholar, *wen jen*, is also sitting on the bed and teaching his servants. Unlike Zhou Wenju's double screen, Liu does not incline to make a contrast between the feminine and masculine

spaces, but rather he chooses to extract the spirit of the scholar painted on the sub-representation and project it into the domestic place. It thus becomes a symbol for the social status of the gentleman. Consequently, the double screen here has two functions: to establish spatial illusion of C-P into distance, and on the other hand, to be symbolic revelation of the subjects it depicts. It is rather more complicated than the screen painting like that of Kuo Hsi [Figure 4-17], and scholar paintings of Wen Zhengming [Figures 4-24 and 4-25]. In other words, it is beyond either realistic representation of space or symbolic commentatorialism of later periods: it may have both.

Figure 6-8 Liu Guandao (1279-1300), detail of Whiling Away the Summer, late 13th century. Nelson-Atkins Museum of Art, Kansas City, Missouri

Both mirror and double-screen presuppose a stabilised station point; yet, meanwhile, the reflections and illusions they compel to make put a further counter-effect for representing spatial depth, due to their technical compensations to eliminate perception of a fixed distance between the observer and the observed. They induce a view of looking into reflected images. By explaining the visual feature of mirror and double-screen, it may be no longer restricted on a two-dimensional medium by any representational

technique of C-P, but broadened into a critical conversation between spatial perception of distance and manners of how their visual images are utilised.

The mechanism of mirror involves an incomplete movement of C-P because both the image and station point is suggestive, rather than present. In the actual space it is expected to associate with a firm bodily movement. Sometimes it utterly transforms spatial perception and visual techniques of C-P. As a mirror-reflection can represent *double-screen* to look into illusory, what will happen if seeing from the back of it?

The physical material of the bronze mirror denies such a possibility; but it is left to explore for a screen painting. Since a painted screen doesn't have to be an opaque blockage, sometimes a semi-transparent silk or paper allows spatial perception from both front and back. This binary visual system demands more of intensive bodily movement.

6.2 Bodily Revelation of 'Image'

In the spatial perception of visual representation, it is always necessary to balance the positions of the observer and the observed. This is a more explicit problem that the curator and designer of the museum worry about. How to deal with a right angle in viewing representational art demands intensive study on its cultural background. It has to be in this way because highly possible is that ancient people utilise images in a different manner from what modern visitors expect in the museum. When paintings are hanging on the walls of museums, perception is extremely restricted for the convenience of art management, not to preserve their original styles of displacement. For instance, Fazang's mirror installation can seldom be duplicated for the exhibition, since it will be meaningless to place the formation of a mirror in the exhibiting space where it lacks the surrounding Buddhist frescos. Not to mention the missing monks who can reveal its true meaning.

Visual representation of paintings confronts same problems. To appreciate the beauty of a screen painting, one can only view it on the wall of museum; it is impossible for us to unfold and enjoy its face from the opposite side. A screen painting should always be mounted on the frame and displayed, not attached

to a wall but allocated apart from it in both exterior and interior spaces. In a Chinese garden where multiple categories of screen painting and its alternatives are installed to make the same "illusions" of spatial perception like that of a mirror, it is not as simple as viewing pictures in the museum. One has to wander around them in a way of motion, as in what Li Yu has already documented in the last chapter about *bian mian*, the hollow face of a wall for the picturesque view of a landscape.

On the other hand, to restore manners of visual perception requires originating representation to actual situations. For religious transformation, one would revisit Buddhist caves for their revelation; but as far as the mounted screen painting is concerned, one should turn to Chinese domestic space, like that of residential houses and landscaped gardens. In the former it is a Confucius ritual that holds the dominance of social hierarchy; it thus denies the sense of flow frequency in bodily movement, as well as free spatial connection. On the contrary, in a landscaped garden where both natural and artificial landscape is perfectly blended, perception of C-P for spatial depth is largely strengthened by decorations like mounted screens when they intrigue observers to walk around. Both painted/mounted screens and paintings are expected to be routine installations in garden buildings. The mechanism of a screen painting in magnifying possibilities of spatial depth becomes such an indispensible feature of C-P that one can see in any Chinese landscaped garden of southern districts the most distinguished utilisation of such a domestic visual transformation. However, the story of movement will lead to religious transformation first.

6.2.1 Surrounding Transformations: A Revisit to Buddhist Caves of Dunhuang

The fresco in Cave No.135 of Dunhuang Grotto [Figure 4-8] is a typical piece of Buddhist transformation (*bian*). It stands for a kind of spatial composition in which figures of Buddha and architectural structures horizontally divide the pictorial narration into compartmentalised courtyards. Architectural environment successfully associates with landscape, and gives the fresco a

remarkable impression of space that extends endlessly. This point of view is partly true if only regarding visual techniques of C-P on this stabilised surface.

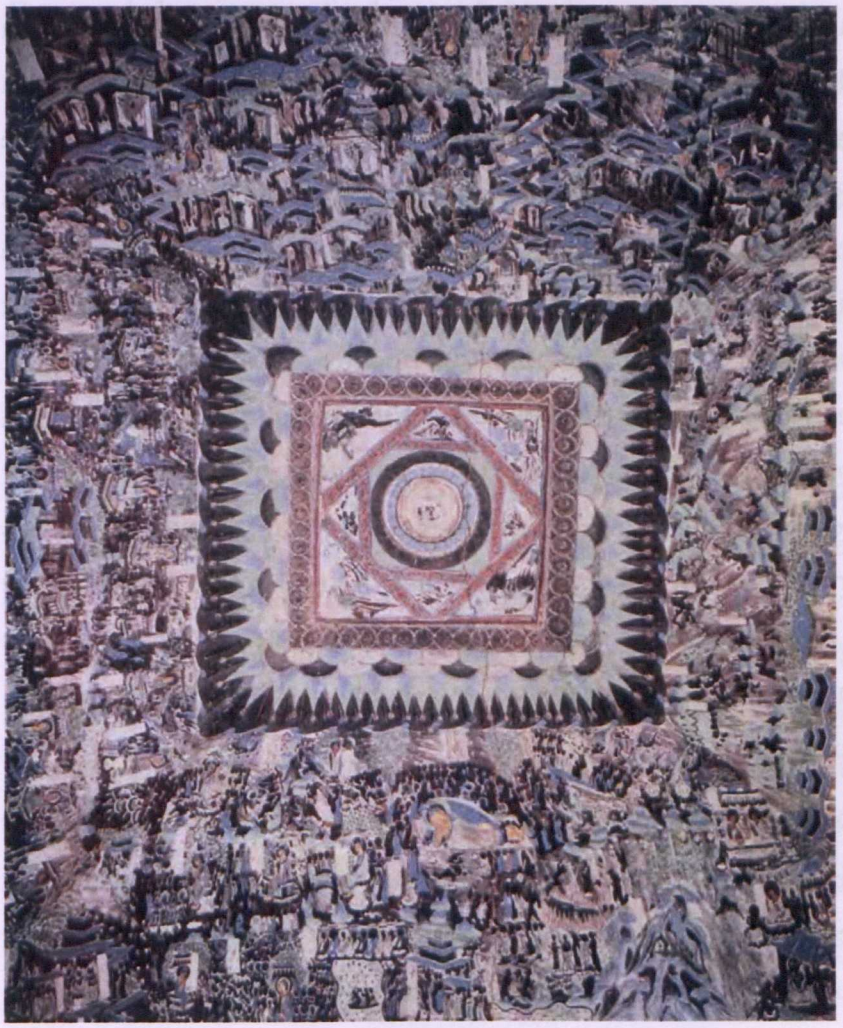

Figure 6-9 Transformation tableaux painted on the four slopes of the truncated pyramid ceiling of Cave No.420, Dunhuang. Early 7th century. From Roderick Whitfield, The Art of Central Asia: The Stein Collection in the British Museum, Vol.2 Paintings from Dunhuang (New York: Kodansha International Ltd., 1983), Plate 4

However, it seems not to be built upon a firm ground, especially if taking consideration of how ancient Buddhist monks use these images in a ceremonial proceeding. Remember the *mirror hall* depicted in Cave No.31 [Figure 6-9], with two gentlemen sitting in the middle of mirrors. They have to turn their heads around to look into the mirrors and see distorted visual transformations of their bodies and frescos on the walls. It also discloses that they may have used, instead of plain glass, the convex bronze mirrors that are capable of neutralising definite forms. Whatever represent on the frescos may not require a clear spatial composition, since it is the reflections and illusions

of the frescos which dominates the perception during religious ceremonies, rather than a direct view of them.

Actually, for all of the eighteen explanations of the meaning of transformation listed in Buddhist texts, a central premise is firmly secured, that is a process/movement. [95] According to Wang's insightful examination, these monks possibly do not care about spatial rendering at all during the excavation and renovation; their purpose is to allow sincere believers to sit in the middle of the cave, immersed by numerous pictorial transformations of Buddhist stories, and gradually visualise the doings of Buddha and evils in their heart. The compartmentalisation in the distribution of images, in this sense, is not a consequence of horizontal narration, but of purpose that, by physically seeing and mentally experiencing series of sub-images repeatedly, Buddhist monks actually perform the activity of reading the texts of sutra which document the same contents as that on the cave walls. In other words, seeing those frescos is actually reading texts; thus both can work as powerful religious spells to recall Buddha and bodhisattvas to exorcise evils.

For example, a transformation tableaux painted on the ceiling of Cave No. 420 at Dunhuang [Figure 6-9] displays a perfect composition of visual space that attaches to the truncated pyramid slopes. Practitioners have to sit right under the round figure that symbolises the sky. When reading the transformation tableaux, the believers turn around their heads and go through the sutra images in a horizontal sequence. Possible as it might be, this roundabout movement never ends as long as worship continues. It is believed that, during the endless

[95] Eighteen Transformations listed in Buddhist texts are concluded by Eugene Wang in his book *Shaping the Lotus Sutra: Buddhist Visual Culture in Medieval China* (Seattle: University of Washington Press, 2005), introduction xvi. The text is quoted as: "These are the ability (1) to move any object, even the worlds, (2) to emit fire from the body, (3) to emit light that can illuminate the innumerable worlds, (4) to cause beings in all the gatis (states of sentient existence), including Buddhas, bodhisattvas, and devas, to be seen, (5) to change the nature of an object into something different, (6) to go anywhere, through walls, mountains, water, air, and so forth, (7) to roll anything, even the Himalayas, into a minute size, (8) to enlarge minute objects to gigantic proportions, (9) to store up swarms of people, mountains, or earth within the body, (10) to enter any group, assume their forms, shapes, and voices, preach to them, then disappear, (11) to magnify the body a thousandfold, (12) to disappear, (13) to cause living creatures to become subject to one's will, (14) to control the rddhi (supernatural power) of those below him in rank, (15) to equip sentient beings with fluency in expression, (16) to cause one who has forgotten the Dharma to remember it again, (17) to bestow joy on listeners, (18) to send forth light to all creatures in all worlds." In the head of each entry, there is always a verb that gives the impression of a process, which may require Buddhist believers to experience the transformation that surfaces with the duration of time.

movement with repeating visual communications, the "Universal Gateway" documented in the Buddhist text *Lotus Sutra* can finally be opened and the *Karma* wisdom is accordingly awarded to the performers.

In the repetition of viewing images of similar composition, Buddhist performers are required to keep moving their eyes; and it is unsurprising if the observer has additional but necessary obligation to turn around the head in order to fully understand grand stories painted in a cave full of religious images. It is so especially when those images on surrounding walls are of identical contents. Worshiping observers must always sit in the middle; and such all-included consideration is achieved if no movement involved.

Movement is thus the key to disclose the whole sutra texts, and it is far more essential than which is represented by pseudo-depth techniques of C-P in a single sub-representation. A visual representation of 6th century A.D. like that in Cave No. 135 [Figure 4-8] has already noticed the indispensible function of movement in the pictorial communication. When such a landscape painting is mounted on the screen as a complement to structure the space, it demands not only a stable visual perception towards the pictorial world in the painting, but also an association to regulate the perceptual movement of the observer. A screen painting thus provides a twofold possibility from both sides, which is the binary perception of representation.

6.2.2 Transparency from Both Sides: Binary Visual Perception of Screen Painting

6.2.2.1 Binary Model of Chinese Ancient Representation

In explaining difficulties of perceiving an actual building, Arnheim persuades that the visitor be bound to see it outside and inside (Arnheim, 2009: 108). It is because architectural space is always too complicated to understand from only one point of view. As both the front and back of a building cannot fall into a single field of vision, one has no choice but to glimpse around it to grasp the totality of spatial relation. A similar purpose leads architects sometimes to use section drawing to reveal the reasoning between interior configurations and constructional details. Vertical and horizontal sections are both partial

glimpses of totality; when juxtaposing them, integrity of spatial relation becomes more explicit. That is the reason why architects have to associate drawings of layouts with sections to make the model visually constructional. It is a particular visual perception of the binary system. This visual system of overlapping does not come into being only after two visual fields of different locations meet; it exists even within a single piece of perception.

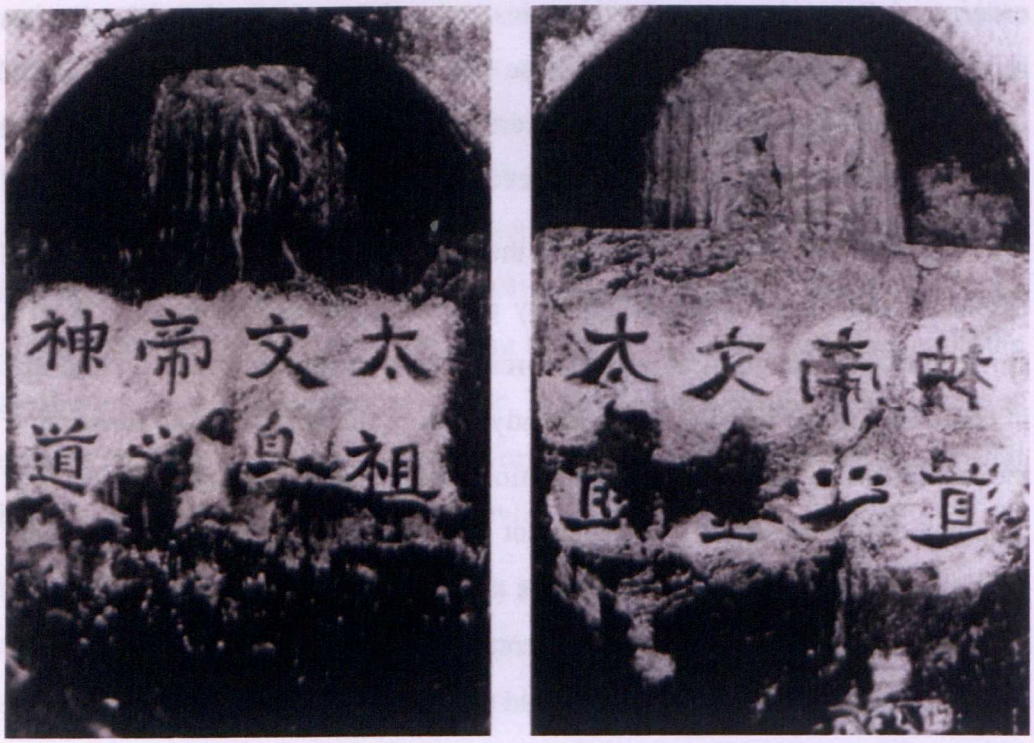

Figure 6-10 Mirroring inscriptions on stone pillars in Emperor Wen's tomb, 502 A.D. After Zhu Xizu et al., Liuchao lingmu diaocha baogao (An investigative report of Six Dynasties mausoleums. Nanjing, 1935), figs. 20a-b.

Not coincidentally, Wu Hung (1994) identifies the binary perception as rather a traditional feature of the Chinese ancient art. Engraving stones of the Han Dynasty have already introduced inversed inscriptions and mural images to provide an inverted manner of view. On the stone pillars in Emperor *Wen*'s tomb [Figure 6-10], mirroring inscriptions are identical with their characters but in reflection. Their text passages have rather ordinary meaning, "the spirit road for the Emperor *Wen*." What confuse observers are their manners of writing: while the left panel is written ordinarily from left to right, the right one chooses a reversed sequence. Wu Hung believes that the symmetrical distribution of these panels along the spirit road and their reflecting images must suggest a purposive intention. He discloses that the left panel of normal view is offered to the mourners who perform commemorative activities; and

the reverted text on the right panel is attributed for the convenience of the deceased emperor to read at the other side of the spirit road in the underworld. The mirror relationship between the two panels thus contributes a metaphor that connects life and death.

The mirroring inscriptions echo ancient Chinese mourners who usually prefer to write the memorial poems in the point of view of the dead, not a living person. In this way, the poem is able to create a mutual connection that is shared by people from the worlds of both life and death. Wu Hung calls this a "transparent gaze." The "real" perceiver of such kind of image is supposed to be placed at a liminal viewpoint on (or within) the representation. Figure 6-11 shows the diagram for the mechanism of this liminal viewpoint and the corresponding binary vision system. The liminal position is on the threshold of entering across the representation; it does not presume an arbitrary direction of view from either side of the image. Rather, it welcomes seeing it from both sides.

To make a plausible deduction, it is both difficult in visual technique and worthless in symbolic meaning for artists to depict the pictorial scenes of both sides simultaneously. For example, a foreshortening effect of spatial depth is legible only if seen from one side; thus it may be neutralised if overlapping with another similar foreshortening from the opposite direction. Understandably, a binary vision of foreshortened spatial depth can seldom be found in C-P of Chinese ancient representational art. However, other than the mirroring texts, there are still many ways that ancient artists have utilised to deliver the binary vision. One can find slight traces if backing to the engraved stone sarcophagus in the Nelson Gallery of Art [Figure 4-5].

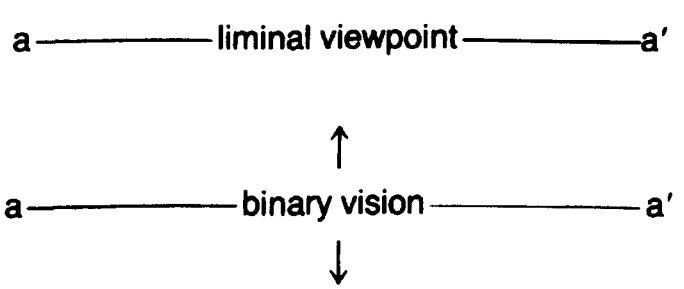

Figure 6-11 Diagrams for liminal viewpoint and binary vision. (Wu Hung, 1994: 67)

In Chapter 4, the Nelson sarcophagus has been examined by its delicate construction of space-cells. Aforementioned analysis is mainly around the application of visual techniques of C-P in two-dimensional space. The most explicit feature of this representation is the repeated juxtaposition of pictorial scenes. The literature it implies has not yet been mentioned about.

A careful study on another piece of the same sarcophagus [Figure 6-12] suggests that C-P of binary vision is involved here, not in a way of overlapping the diminishing figures, but of juxtaposing two scenes closely when they are telling two opposite viewpoints of the same story. In this image, the juxtaposition of episodes that are seen from both front and back is used intentionally to challenge the normal perception of representation. According to Wu Hung's explanation, in the left scene a group of bandits emerge and confront a famous Confucian paradigm named Wang Lin. They are depicted with frontal profiles, which indicate Wang Lin is supposed to be facing them in a contrary direction: that of seeing into the sarcophagus. So, intentionally, the artist puts the back images of Wang Lin and his brother in the adjacent space-cells.

In the right part of this stone piece, Wang Lin leads the servants into the valley with a direction that steps into the image. In the same manner as that of Emperor Wen's inscriptions, the story that Wang Lin encounters bandits consists of a pair of scenes front-and-back. Similar formula of binary approach can also be found in Ku Kai-Chih's *Admonitions of the Instructress to the Court Ladies* (4th A.D.).

Both of these examples show a progress in C-P of binary vision in a single representation. However, Wu Hung believes that both of Ku's paintings (see another of Figure 4-4) indicate a critical point of the binary mode, transiting from being attached to a surface that denies penetrating views to a more domestic application onto the screen.[96] While a binary mode of vision on a stone sarcophagus intrigues but simultaneously rejects the observer to see the image from both sides, screen paintings that can be either semi-transparent or

[96] Early representations on paper, like those of Ku Kai-Chi, may be the screen paintings as well.

partially hollow according to their material and function greatly satisfies the possibility of seeing "through," and becomes truly an ideal medium of binary.

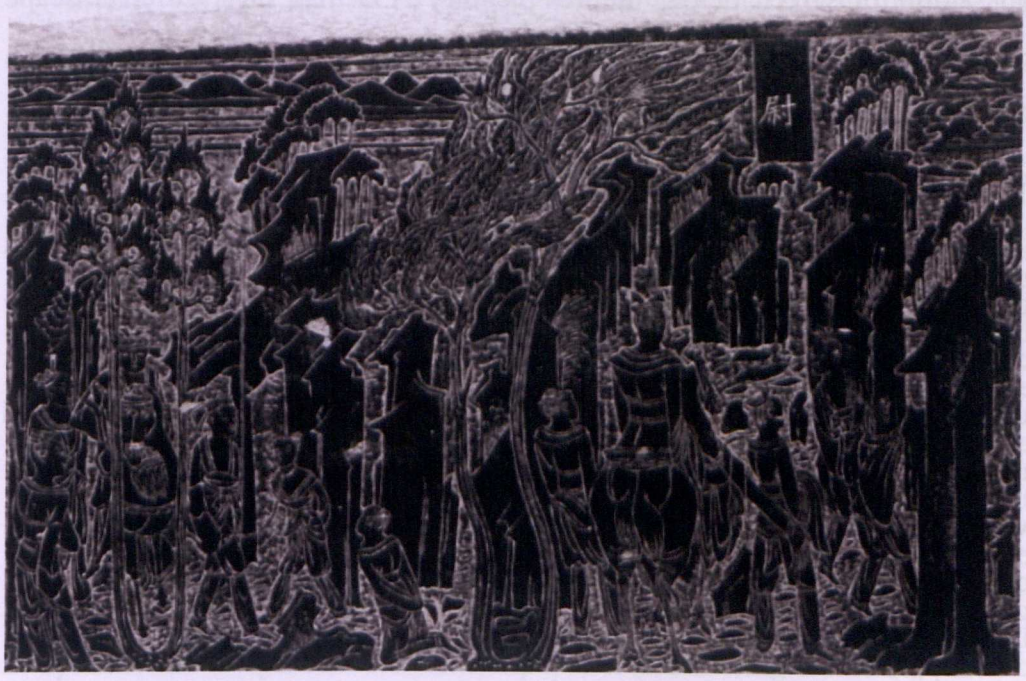

Figure 6-12 Story of Wang Lin. Detail of engraved stone sarcophagus, c. 525 A.D. Nelson Gallery of Art, Kansas City.

6.2.2.2 Painted Screen and the Penetrating Gaze

It is believed that no picture that is intended to be seen by C-P of binary mode existed before the 5th and 6th centuries A.D. (Wu Hung, 1994). During that period when paper had not been massively used as the general medium for visual representation, images were still attached to two-dimensional surface, introducing seldom a true binary view. Ku Kai-Chih's works are rather precedent for the later screen painting, which are installed ordinarily to structure and separate space.

Jerome Silbergeld has examined three categories of Chinese painting as wall painting, screen, and hanging scroll (Silbergeld, 1982: 12). In his study of art history, prototypes of screen painting take forms of a single, large, and free-standing image that apply directly to wooden panels. During the Han Dynasty, it was already placed, as Figure 6-7 shows, as a decoration behind people to indicate their social status. A screen, so called *ping* 屏 or *zhang* 障 in Chinese, also served as a partition to divide exterior and interior space at the doorway.

In this sense, screen painting has certain architectonic potentiality. Daily exposure to the environment accelerates the procedure of decay; thus, nearly no sample of screen before the 10th century A.D. has survived. Landscape paintings of the early stage are highly supposed to be used in the manner of a painted screen since their very birth.

The study addressed here is not about the history of the painted screen; rather, it intends to disclose potential visual techniques of binary mode that attach to the screens. It would be tremendous for ancient people who have only newly discovered the convenience of paper for painting. In Wu Hung's understanding, a screen painting should be seen from both sides,[97] and indicates two faces of dualistic and complementary nature which defy ordinary vision. A screen painting is capable of the conveyance of spatial division, connection and extension; and it has been selected as one of the pictorial signs in Chinese architecture to structure space (Wu Hung, 1996: 18-19).

In Du Jin's painting *Enjoying Antiques* [Figure 6-13], the installation of two distinctive painted screens helps both division and identification of sub-spaces. Firstly, two screens follow zigzag outlines of the playground, separating it from the blank area behind that can be regarded either as a pool of water or nothing at all. The subject of landscape on both screens perfectly echoes the environment background. On the other hand, distinctive features of decoration and location of screens indicate a delicate spatial hierarchy in gender. The marvellous wood carving and the central location of the middle screen highly contrast with those of distant one. One is masculine, strong and compelling; the other feminine, fragile and submissive. The two screens that Du Jin provides not only offer a penetrating view into landscape, but also offer brand marks of political and social fields in front of them.

In another example, Qiu Ying (1502-1551) provides a similar spatial composition: three scholars are surrounded by attendants and children in an open ground. Two free-standing painted screens enclose within a semi-private space the scholars who are enjoying and evaluating antique works [Figure 6-

[97] For a full explanation of Chinese screen culture, see Wu Hung, 'The Painted Screen' in *Critical Inquiry*, Vol.23, No. 1 (Autumn, 1996).

14]. The landscape painted on the screens in Qiu Ying's painting indexes the political status and spirit of a scholar paragon. However, this tradition is changed during later periods. A screen painting does not have to indicate any masculine information of the owner, but a pure impression of *wen*, the scholarly spirit or cultural refinement. As Wu Hung discloses (1996: 151-60), this transition in applying screen painting may have two reasons. The first one is about the attitude towards the relationships among artistic representation, natural landscape, and human figure. When literati culture grows as a dominant phenomenon, painted screen loses its figurative function and becomes a purified signifier of *wen*. This subject becomes more evident in the garden paintings of the Southern Song Dynasty (1127-1279). Previously the spectator was explicitly placed within as part of the representation; now it favours a more neutral position of the scholar master depicted, by painting the landscape in a bird's-eye view composition where spectators have been driven away from the image. Another clue exposes if considering a fact that, as the scholar figure disappears in the picture, landscape screens can thus be extensively used by female members and children in the family without restrictions. This is evident in later representations of the painted screen.

Figure 6-13 Du Jin, Enjoying Antiques. National Palace Museum, Taipei.

Figure 6-14 Qiu Ying, Ranking Ancient Works in a Bamboo Court. Palace Museum, Beijing.

See Figure 6-15 and Figure 6-16. Both of them are about the installation of a painted screen as decorative furniture, in either exterior or interior space. In Figure 6-15, the female sits by the table but against the screen; while in Figure 6-16, the mistress faces both the table and the screen. There are obviously two ways to use the painted screen as a spatial partition. One can either take the screen painting as a pictorial background for the activity, or visually associate and penetrate it into the landscape behind. For the waitress standing behind the screen in Figure 6-15, she must have only seen a blurred profile of a female juxtaposing the landscape painted on the screen. It seems that her mistress is wandering in the lakeside view. In Figure 6-16, both the mistress and waitress

can enjoy the juxtaposition of artificial scenes and natural landscape. Interestingly, in both cases, the painted screen is juxtaposed with the reflection of female in a mirror. Although screen painting is available to the female, the submissive status of them still prefers an indirect view of their figures. Their bodies are either turning back away from the spectator, or hiding behind the screen. Thus, mirrored images of their faces appear to be a perfect alternative. In another point of view, as it is explained in the first half of this chapter, *double-screen* transforms objects into illusionary images. Not coincidentally, both the painted screen and mirror potentially have intentions as such. So to a certain extent, in both paintings two double-screens are created: one is the screen painting that introduces the binary penetrating gaze from both sides; the other is by the mirroring reflection of the human figure. The political and cultural context is thus established.

In all, perception of a screen painting requires either multiple spectators on both sides of the panel, or a time-space duration which allows the penetrating views of a single person through a bodily movement around the screen. The binary perception of C-P helps screen painting to transform the significance and function of pictorial images; the screen itself divides horizontal space into several parallel planes and regulates motions for perception. In other words, the screen sacrifices its physical nature and becomes an illusionary and empty window for the penetrating gaze of spectators into the landscape behind. With the help of this kind of C-P, the painting on the screen panel is not only transparent in its material, but also in its symbolic syntax referring to the surrounding environment which dissolves the image gradually.

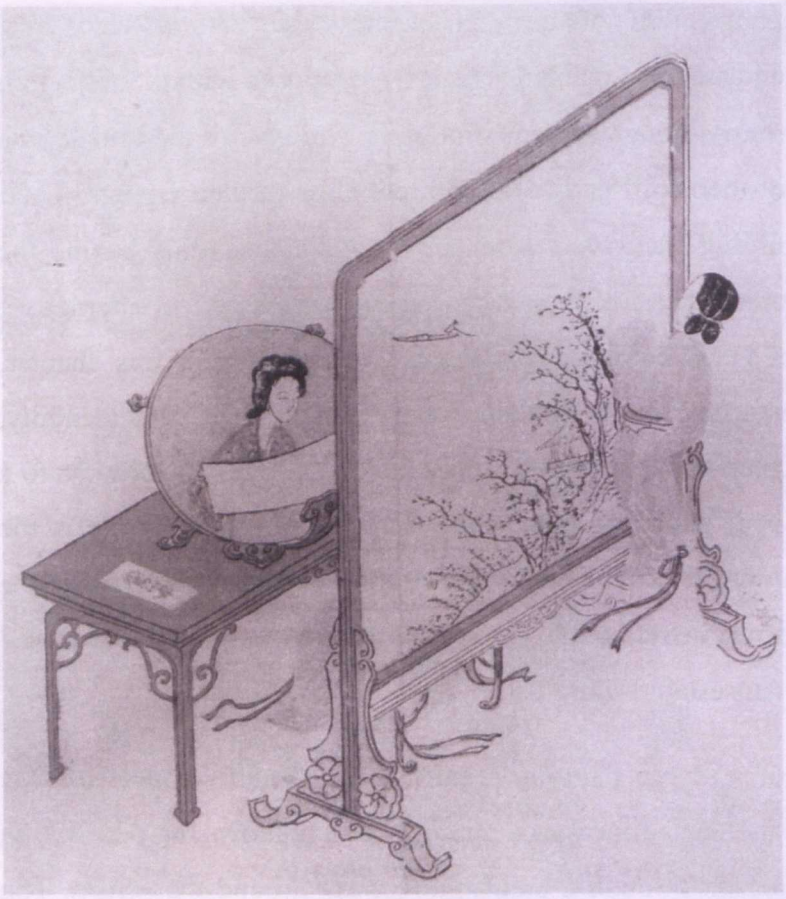

Figure 6-15 Illustration of act ten of The Romance of the West Chamber, c.1640. Museum für Ostasiatische Kunst, Cologne.

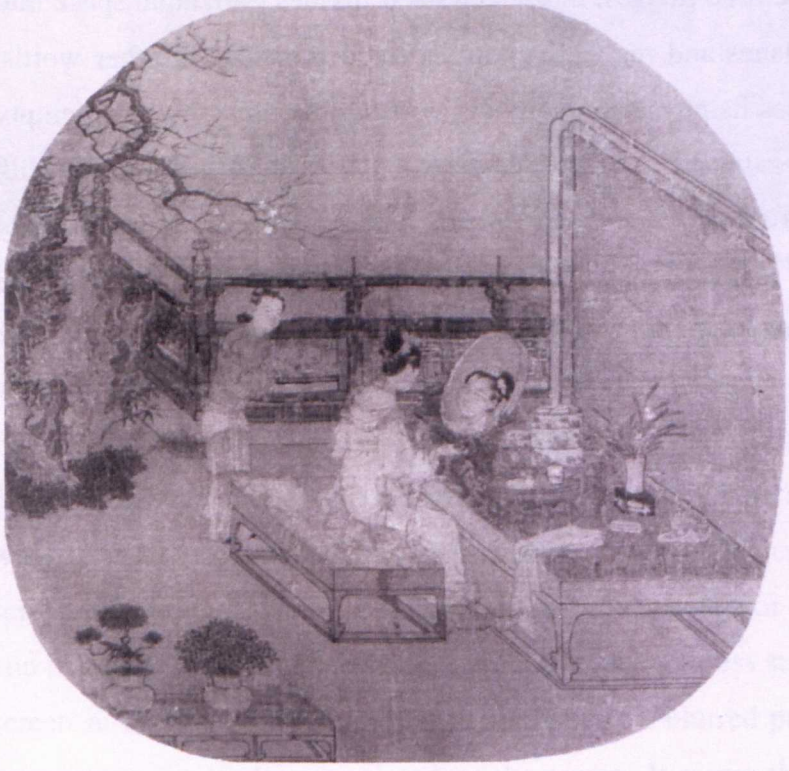

Figure 6-16 A Lady at Her Dressing Table on a Garden Terrace, attributed to Su Hanchen. Fan painting. Denman Waldo Ross Collection. Museum of Fine Arts, Boston.

Consequently, a painted screen displayed in the actual space, especially in a Chinese garden, becomes indispensible to structure artificial space. The topmost requirement of it is the appreciation toward nature, rather than the provision of warmth and the shelter from beast. Architectural partition is of no need to have mass blockage; but on the contrary, it uses hollow and playful decoration by which transition of spatial depth flourishes with its techniques of C-P.

6.2.3 Episode: Snap-Shot Images and Motion Parallax

Both the studies of mirror and screen by Eugene Y. Wang and Wu Hung exemplify a different viewpoint on the spatial perception of visual representation from those of the western scholars. Hung suggests that it be impossible to compare the overarching scheme of perspective to traditional Chinese painting (1996: 18-19). To indicate spatial depth, ancient Chinese artists may rather choose a series of pictures instead of a single image geometrically constructed. With the help of the physical form of screen panel, those images selected with purposive intentions can achieve the perception of spatial depth in a distinctive way.

Referring back to Gibson's list of the cues for spatial depth, it mentions aboutmotion parallax as the third indicator of distance. To push it further, Gibson proposes an identical theory, as does Arnheim, about the perception of the successive images in order to integrate into a single panoramic visual experience. This is basically a Gestalt point of view. It implies the possibility that the observer of an actual space may acquire in a process of motion the successive visual stimuli that somehow later merge with each other. The mental phenomenon is called sensory organisation (Gibson, 1950: 187). The integration is so instant and successful that the observer does not consciously notice its presence. So theoretically, Gibson believes there are pieces of available stimulus that can be identified by the experiments of cognitive science. These visual stimuli are acquired from the perception of various cues for depth. It is a process to notice the different velocities of transformation between grids of textures. A human body is placed in the centre of this perceptual system. When the perceiver moves the head from side to side, the

comparison between the patterns of cues will disclose the depth information. Psychologists Ralph Norman Harber and Maurice Hershenson propose that the relative velocities of transformation in the patterns associated with the movement of the eyes can be equally conceived of as a cue for depth (Harber and Hershenson, 1973: 320). It is a rather normal experience in which the distant object appears to move faster than the closed ones do when the observer moves the head horizontally. This is what motion parallax means.

This motion parallax includes two consecutive aspects: the acquired successive visual images and their integration. For Gibson, there will be a primary memory following each station point where the observer stands to perceive the environment. And this primary memory of vision fades very slowly; thus, it has the chance to merge with other primary and secondary memories acquired from other locations. The result of their integration is a panoramic vision, the visual world which does not yield to the fading memory; because there are always chances to obtain new visual memories instantly. The visual world in this sense appears to be a congregation of discontinuous primary visual memories which spread everywhere and thus determine the equally clear quality of spatial experience.

From the beginning of western philosophy of visual perception, Greek thinkers have already embraced the idea about the discontinuity of consciousness. It echoes the modern cognitive study of human mind and proclaims that the apparent continuity that one perceives in the actual space is intrinsically an illusion of consciousness. There is a case study of cognitive science that is quite often referred to: the cat behind a fence. It is understandable that one cannot see the whole cat at once, since part of its body is always covered by the fence. But we never confront the difficulty of identifying the animal as a cat, although the visual information is insufficient. The mechanism of this experience is the same as how the environment is perceived: it is supposed that the world is visually and continuously surrounding us, without noticing that the blind spot on the physiological eyes claims there will always be a part of the world we cannot see at each moment. It is a cognitive gap in perception while using "no filling-in" (Noë, 2002: 3-4), which is called the Snap-Shot phenomenon.

What Arnheim claims about the binary perception around the building is somehow similar to the Snap-Shot system. When juxtaposing the façade, layout and section of architectural drawings, architects are able to deduce the possibility of a rational construction by the integrated calculation and association. In perceiving the actual space, one should be obliged with a similar mechanism of vision. Otherwise, the apparent continuity of space will turn out to be a grand illusion. Cognitive scientists like Daniel Dennett and Alva Noë propose a phenomenological thinking of this "grand illusion." They believe that our sensory relation to the world is divided into two correlative aspects: movement-dependent relation and object-dependent relation. The former addresses the ability to perceive the change of sensory stimulation due to the movement; the latter is to be aware of the movement of the object when it produces sensory change. Both of them contribute to the so-called sensorimotor skill (Noë, 2004: 62-65). When the perception of the body of image is not complete or absent, one can still rely on the perception of the change in environment. Between the two consecutive snap-shots of the cat behind the fence, one has to move a few inches to another position to complete the whole image of the cat. During this process, one can consciously mediate two images together with the sensorimotor skill. It happens not because all the representations of the cat are already in the mind, but because of the possibility to access all of them; and one knows such possible access. This knowledge is thus capable of mediating our bodily relation to the immediate environment (Noë, 2002: 10). To a certain extent, it echoes Gibson's theory of obtaining instant visual memory.

Both Gibson's study on visual perception and Noë's cognitive experiment deliver a similar point of view for spatial perception: that the perception of depth and distance is actually discontinuous; meanwhile there is a mediating mechanism to associate the pieces of perception. The association is so successful and unconscious that the object observed appears to be a firm matter, rather than a compartmentalised series of visual impressions. The perception of the picture thus becomes "transparent" (Noë, 2004: 175-79). By the word "transparent," it means a possibility to perceive an object simultaneously from different locations, which can also be translated as "from

different spatial depth." Since Gyorgy Kepes's photographical experiments of overlapping images, modern art and contemporary architecture have already indulged themselves with the transparent quality of many materials in order to create a similar grand illusion of spatial transparency (Kepes, 1967: 77-79). The mechanism of visual perception has been more and more in favour of the delivery of potential illusion, rather than the discovery of truth like what Fazang's mirror installation intends to reveal.

Admittedly, western study always derives from a physiological and psychological point of view. Unfortunately, neither of them intrinsically associates with the Chinese context. When Chinese modern scholars talk about the parallel placement of a series of images in one representation, they are not intended to imply C-P with the presence of the sensorimotor skill. It is also unacceptable to take Arnheim's Gestalt analysis on the Chinese representation of space as a random sequence of visual impression. When Joseph Needham addresses "parallel perspective"[98] in Chinese painting, he does not make it equivalent to Gibson's motion parallax. The features of parallel perspective, as Needham explains, is rather more like the geometric construction of the affine system of the station point, although he may not assume the participation of a spectator. Or rather, as Eugene Y. Wang and Wu Hung explain, Chinese ancient scholars were highly inclined to firstly select a series of intentional visual images, either in painting or from the actual space, and then make them reflect back and forth by means of a mirror, screen and available alternatives. When this reflection numerously repeats, spatial depth of C-P in the Chinese representational art is accomplished as the "grand illusion" of spiritual atmosphere.

[98] Joseph Needham paraphrases R. Soame Jenyns's thinking of Chinese painting: "Let it be accepted, then, that on the whole there is no true vanishing-point in Chinese drawing, and no exact rules of foreshortening. The horizon boundary was not felt to be important; the spectator was not compelled to participate in the drawing by his very physical position ... What they employed was 'parallel perspective', i.e. a system in which lines which were parallel in fact remained so in the drawing ... parallel perspective can be found already in the drawing of the scenes carved in relief in the stone tomb-shrines of the Han period ... It has justly pointed out that in early Chinese drawing there is no single point of view at which the spectator is supposed to stand, and from which his glance radiates from right to left. In all cases he has to be imagined as standing point blank in front of that part of the surface on which the object is presented" (Needham, 1971: 113-4).

Summary

For the explanation of motion as the indicator of spatial depth for C-P in Chinese visual culture, the chapter takes a twofold viewpoint in both geometrical and cultural aspects, other than the physiological and cognitive studies of the western counterpart. Meanwhile, the geometrical invariants by themselves do not suffice for Chinese spatial perception, simply because ancient Chinese artists had not acquired the equivalent knowledge of geometry as had western scholars for their artistic creation.

Theory of station point of C-P thus has latent drawbacks due to its geometric basis. However, in another point of view, a station point does not intend to suggest a fixed location where the observer is supposed to be; it is also possible to indicate a basic visual direction towards the representation. So a station point can be regarded as a method to define the visual direction, rather than a simple location, for the study of Chinese visual culture. A station point introduces two relative possibilities: the situation when an image moves and that when the observer moves. The latter also includes two aspects: the vertical and horizontal movement of the observer.

When the Renaissance perspective proposes a station point at the middle distance, early East-Asian representational art may choose to position the station point at optical infinity high above in aim of a similar affine geometrical construction. When a station point is pulled vertically close to the eye-level horizon in later Chinese landscape painting, it sacrifices the uncompromised infinity and replaces it with the overlapping and diminution in size and scale when space extends into distance. On the other hand, the horizontal movement of a station point and image reminds us of the ancient utilisation of the mirror. Both Chinese and western artists ever used a mirror to reflect and transform the actual space into visual illusions. The example of a single installation of a mirror can be found in Chinese ancient visual art of both religious and secular representations. Buddhist practitioner may use a mirror to reveal the spiritual wisdom of Buddha; and in the domestic environment people believe it can grasp dynamic images of ordinary life. In

both cases, a mirror instantly brings both beauty and confusion in spatial perception.

To magnify the bewildering illusion, ancient artists intend to make a system of *Double Screen* to duplicate the mirroring reflection repeatedly. And this visual phenomenon can be established by both mirror and the painted screen. *Double Screen* is achieved when the painter depicts both actual scenes and its mirrored images (or a suggestive image that resembles the actual scene) within one representation. In such a pictorial composition, the observer often fails to perceive definite spatial depths; space is elusive and compartmentalised by the frame of the mirror again and again. Endless spatial segmentation and extension thus provide possibilities of distance with purposive intentions. *Double Screen* appears unsatisfied with only one visual direction; by means of the painted screen, it actually indicates two ways to perceive the pictorial space from both its sides. And this involves a necessary bodily movement for C-P. In the mirror hall of Dunhuang grotto, monks are required to turn their head in a round circle to appreciate the religious frescos on the wall. Chinese visual representation of C-P also indicates a binary mode of vision.

Wu Hung's study discloses two facts of the binary mode. On the one hand, the binary vision has already been used in ancient tomb inscriptions and sarcophagi to create a liminal viewpoint on the threshold of the image. It proposes that both the dead and living person can enjoy the image by this liminal viewpoint. The physical material of the image thus becomes transparent and encourages a penetrating gaze. When screen painting is massively fabricated for daily use, it unsurprisingly bears the same idea to be seen from both sides. The painted screen not only serves as an architectonic partition to structure the space, but also acts as a symbolic projector to the political and social status of its owner. Later on, the function of the painted screen becomes much more playful; and thus it can be placed everywhere as an ordinary domestic installation, especially in the Chinese landscape garden. Despite that, the penetrating gaze of the screen is never lost and, on the contrary, even magnified in certain visual representation. This penetrating phenomenon is quite obvious when one sees from interior space through a mounted screen into the natural landscape outside. Sometimes the pictorial

space has been created as a twofold double screen by which the identification of spatial depth and its cultural context appear to deny further explanation.

It is clear feature of C-P that ancient Chinese artists may prefer to intentionally select a series of images, instead of an overarching geometric system, to indicate the spatial depth. These images can be purposively reflected and echoed by the mirror, painted screen and other potential alternatives to transform the actual space into a grand illusion. It is nothing like western psychological, perceptual, and cognitive studies, all of which propose either a Gestalt visual process as the integration of random successive images, or a twofold mechanism to perceive the spatial invariants according to the changes in object and environment. The differences in-between are certainly not intended to make a giant contrast between Chinese and western visual studies. Yet still, the particular choices of Chinese ancient people to utilise the mirroring reflection and the double screen illusion may in turn imply a simple idea that everyone will agree with: Chinese visual representation of spatial depth is not a result of physiological association, but that of a cultural phenomenon.

Chapter 7 Spatial Depth in the Appropriated Visual Field: An Iconological Study of a Chinese Scholar-elite Garden

> What enabled that narrow cone or pyramid [of the viewer's eye] to feature *as* the visual field was exactly the enclosure of the frame – the tunnel, the viewfinder, the legitimate construction. But once that frame is dissolved ... that narrow angle is found to be enveloped on all sides by a surround of invisibility. Once disframed, the brightly luminous segment is found actually to be constituted *within* the invisible, the dark or unmarked remainder that extends beyond the edge of peripheral vision into the space ...
>
> How can such a Gaze be represented? For surely we now stand at the very limits of representation. From this point on, only a technique which undermines the frame can stand in for the invisible which the frame excludes.
>
> ----------Norman Bryson (1988:101)

Painted screen is a predominant figure in visual representation. A screen is thus basically an equivalent means for the wall and window to enclose and penetrate space. With part of its architectural functions lost, a screen gains more to manage vision of spatial depth to the spectator. Screens like Figure 6-16 installed in the open air are not only to hold weights of its structures, but to settle down as semi-confinements of architecture out of natural landscape. When it gains autonomy of an architectural sense and becomes part of decoration, it is more convenient for screens and many others of a similar kind of "joinery work" 小木作 to make profits from the pictorial principles of C-P to show off marvellous composition of spatial depth. Figure 6-15 and Figure 6-16 are all expected to have represented screens in a daily scene of the landscape garden. In this sense, when searching for such a visual

representation in actual space, "joinery work" becomes inevitable for ancient architects to distribute pictorial techniques of C-P for more superfluous vision in a landscape garden. Painted screen introduces several potential visual phenomena of pictorial representation into actual landscape, and thus becomes an undeniable feature in the Chinese landscape garden.

Yet it also brings forward a question that whether Chinese ancient architects have ever used certain visual mechanisms when they build an artificial landscape. In other words, is the landscape garden an appropriate kind of visual representation? In Chapters 3 and 4, the birth and development of visual techniques of spatial depth has already been restored according to the functionality to represent form of space of architecture and landscape. Chapters 5 and 6 have further disclosed the pictorial possibilities of how natural landscape can transform into purposive patterns of form according to a certain visual scheme, and painting into part of landscape as well. But the inquiry is still not solved unless painting and landscape design do correlate in a certain way. It is thus critical to further detect the visual representation in an actual garden; it is also intended to answer whether Cavalier Perspective (CP), as it is normally believed, is an appropriate visual technique or a visual scheme which can transform actual space into iconological forms of purposive patterns which provide the sense of 'pictorial idea' 画意.

Landscape gardens of Chinese scholar elites are believed to be such kind of space with 'pictorial idea.' A case study of landscape garden appears necessary especially when associating visual culture with architectural space. [See Appendix 5] One potential advantage is that Chinese landscape gardens in the southern districts are famous for their extremely delicate and sophisticated "joinery work" of wood. However, readers may still confront difficulties to appreciate visual representation in landscape garden. Although visual schemes of C-P by means of painted screens appear frequently in the paintings of landscape garden, it is still unwise to jump to conclude that the scenery design in a landscape garden is the same as that of painting. To compose architectural structures in actual space is absolutely different from that when painters deploy purposive patterns of form all over the pictorial

space. Spatial depth is no longer suppressed in the garden where distance is real, measurable and even tangible to the eyes in a promenade of bodily movement. Does the landscape garden indeed indicate the same kind of spatial depth as that of a painting? Is it an appropriate visual representation of C-P? All must be answered with a full-scale case study of Chinese landscape garden in the following account.

Unfortunately, although it has long been well-accepted that CP as such deeply relates to the spatial perception in pictorial space, the latest scholarship demonstrates that this linkage is rather vulnerable; because ancient garden builders may never impose a purpose of three-dimensional space in the same way as that of painters for the two-dimensional image. This chapter aims to continue the journey from visual painting to actual landscape garden, yet it has to firstly re-evaluate the role of "image maker" as either painter or garden builder, and to recover how much potential that garden builder works as an image maker; both of which secure a manner of visual study on the Chinese landscape garden. After that, it is expected to show that, in a more restrictive sense, structures in the landscape garden can also be regarded as the bearer of visual techniques in visual culture. So, basically, the conclusion made in this study is based on an attempt to discover potentials of architecture as purposive patterns of spatial depth. Only in this way can ancient Chinese visual representation of architecture and landscape be identified as no more a result of a certain visual manner in a two-dimensional surface, but as a customary compensation to the loss of spatial depth even in an actual environment.

7.1 Representation of Chinese landscape architecture and the Rebirth of Pictorial Principles in Ming Dynasty

Both the birth of pictorial form and visual techniques in ancient Chinese spatial representation have already been disclosed in Chapters 3 and 4, when taking architecture and landscape as specified schemes. However, it is still rather confusing if taking into consideration the possibility that ancient visual media may presuppose a particular condition of visual schemes that are culturally subordinated. To simply suggest that Chinese ancient architects use

the same techniques as those in painting is expected to lead to a dead end. It is thus essential to recognise and redefine the relation between pictorial representation and its potential influence on the construction of architectural space in an aesthetic sense. This iconological study belongs to the level of visual scheme. To represent spatial depth at this level is not a question about the validity of the transformation from real object to purposive form; it is actually a choice with which approach the artists would like to make such a transformation in a special way. Visual analysis becomes an alternative, not essential. As CP is absolutely a subject of visual representation, further analysis thus urges us to know when such kind of visual impression becomes an indispensible matter for spatial perception in actual space. In other words, from when do ancient Chinese spatial makers of architecture and landscape begin to take the spatial construction as a process of making a representation of vision.

7.1.1 Visual Analysis as a Potential Method for Garden Study

As Australian scholar Stanislaus Fung (1999: 208) observes on the historiography of Chinese gardens, "The study of the role of visual images ... is a much neglected topic." Although there are numerous photographical archives and architectural drawings available after the turn of the 20th century, Fung (1999:209) claims that most of the scholars are accustomed to using them simply as a pack of documentaries that demonstrate the historical change in garden layout; thus, they overlook "the specificity of the visual media involved."

There are two exemplary modern visual studies on the garden done by the Chinese: one belongs to a typical method to associate creation of pictorial space with literature; and the other proposes a western point of view when introducing orthogonal architectural drawing into spatial analysis on the garden. Chen Congzhou 陈从周 stands as the spokesperson of the first manner, while Peng Yigang 彭一刚 prefers the second one.

In his publication *On Garden* 说园, Chen intentionally links contemporary photographs with poetic lyrics which indicate the pictorial ideas of the scenes.

In Chen's opinion, the study on garden architecture should be built upon a firm ground of literature review to Chinese ancient painting and poetry theories; his idea is thus heavily associated with a traditional thinking that Chinese visual representation in the perception of space in the garden should be identical with appreciating a painting scroll. It thus requires an aesthetic evaluation like that of Chinese traditional literati, which means it is a visual scheme. And such visualisation has no particular visual techniques to accord with; because it relies not on the iconological study on what is acquired by actual vision, but on a metaphorical imagination. This point of view is equally shared by the studies of contemporary scholars like Stanislaus Fung (1999) and Gu Kai 顾凯 (2009), who dedicate into ancient text reading.

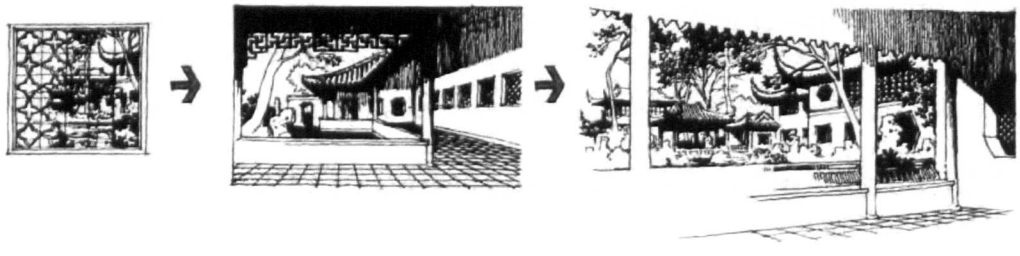

Figure 7-1 Peng Yi-gang's method of architectural drawing (1986:27)

On the other hand, Peng Yigang starts to 'decompose' the Chinese landscape garden by means of architectural drawing which registers as a slice of representational vision in space; it is thus identical to the modern visual analysis of iconology. However, Peng does not really care about the specification and function of architectural structure itself; in contrast, he pays much attention to the possibility of manipulating architectural elements in the garden to represent the same pictorial idea as Chen proposes in literature association. In other words, although Peng successfully transforms real structures into forms, these forms are not of a purposive pattern. They lack associating visual techniques to organise and endow them with symbolic ideas as those in visual art. In this sense, in aim of a similar representation of poetic feelings, both Peng and Chen detach architectural meaning from its physical existence of body and visual impression of form. The transformation of form in this sense does not rely on particular visual technique, but on what the artists 'imagine to see'. The only difference between them is that Chen uses

reflecting words, instead of form, to represent poetic vision in the 'mind's eye', while Peng uses wood and stone which provide a photolithographic impression of vision that can be received by the human body [Figure 7-1]. There is no visual technique involved.

Stanislaus Fung (1999) then identifies the deficiencies in both. He does not presuppose either method as an appropriate approach for contemporary visual study on the Chinese garden. Visual image that is associated with words is not a self-evident bearer for garden architecture; as he says "[Chen's] process of making linkages is the repository of meaning, not the gardens themselves as landscape objects," and meanwhile, "[Peng's] modes of drawing might be deployed in an unconventional manner ..."[99] To make compensation, Fung, on the one hand, associates particular words in *The Craft of Gardens* that may indicate design methodology with Chinese literature and philosophical context, which help translate sophisticated connotations in the garden treatise;[100] and, on the other hand, he believes that photography as a making of images in the garden is largely neglected and it thus should be paid more attention. Meanwhile, Fung insightfully questions the validity of architectural drawing in the garden analysis; because drawing is based on western tradition as a complementary tool for garden design. In the beginning of *Iconography of Landscape*, Stephen Daniels and Denis Cosgrove identify landscape functions as representing, structuring and symbolising the environment; thus, painting and drawing are supposed to be indispensible to the garden design in the west. To challenge this, Fung disfavours a simple use of picture and thus chooses to go against Peng's choice.

Following Fung's guidance, another scholar, Feng Wei 冯炜, further examines the role of visual media involved in landscape ideology, aesthetics and

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[99] In his paper 'Longing and Belonging in Chinese Garden History' in *Perspectives on Garden Histories*, Vol.21, ed. Michel Conan (Dumbarton Oaks: Harvard University, 1999), pp.205-19, Stanislaus Fung examines both the visual economy and difficulties of Chinese garden study that are influenced by both traditional Chinese thinking and the western system of architectural drawing. He pinpoints the fact that, through Chinese history, the use of visual means to "build" gardens is secondary, while word is the primary source.

[100] For example, Fung examines the meaning of *de ti*得体, the appropriateness of body (Fung, 1997: 84-91).

design.[101] His inquiries mainly attach to the idea that perspective drawing is incompatible with Chinese garden aesthetics and design; and consequently he thinks that the plausible CP is not a visual technique of perspective available in the Chinese garden at all. Both Feng Wei (2005) and Wu Cong 吴葱 (2004) mention that the theory of CP is unfortunately established upon doubtful resources and unclear definition for its role in presenting pictorial space. It is the personal intention of this study to acknowledge that CP has long been explained as either a visual technique sometimes, or a particular Chinese visual scheme. As a visual technique, it maybe includes a certain manner of manipulation to a purposive form of space, as disclosed in Chapters 3 and 4 when representing spatial depth in painting; while, as a possible visual scheme, it is still questionable that what CP is able to provide is not more than the visual manners that have been examined in Chapters 5 and 6. In these manners, the 'pictorial idea' or anything that is beyond the level of iconological visual techniques should be delivered in the iconology of representational forms which are organised either in a geometrical system (see Figure 6-2), or in a process of multiple visualisation by means of a mechanism of using facilities and bodily movement (see Figure 6-5).

However, both Feng Wei and Wu Cong have not provided any further explanation of visual impression in the iconographical way. It is thus expected to find many obvious defects in their later studies on the relation between the techniques of visual art and garden making. Firstly, Feng Wei overemphasises visual media as an already-at-hand tool for garden design. Feng is correct when saying that to use visual media in aim of representing space is not like a manual making of it; but he should have also noticed a fact that such kind of independence in visual media will simultaneously bring more confusion when he proposes ancient architects use landscape painting as guidance to garden-making. As Chapter 4 has already disclosed, most art historians are rather reluctant to see the verbal description of space in literature and painting treatises as the same as what is painted on paper. In other words, painting is

[101] To see Feng Wei's analysis on visual media in Chinese garden design, go to the introduction part of his PhD dissertation: *An Examination of Chinese Pre-modern Visual Media, Its Influence on Landscape Ideology, Aesthetics and Relationship to Landscape Experience* (University of Sheffield, PhD thesis, 2005).

painting; while a garden is a garden on its own behalf. The probability of visual media that is believed to have overarched ancient garden design for quite a long time appears thus questionable.

Secondly, when quoting visual media, Feng mainly talks about drawings. Between the actual construction of space and a drawing, there is still an implicit intermediation, the *vision*. As it is known, painting is a transformation of visual impression; thus a reasonable consequence of it is to know how to understand and present a particular two-dimensional visual field of space. On the contrary, a garden is obviously three-dimensional; it cannot be simply taken as an after-effect of the representation of a visual field. When taking this after-effect as ordinary, one has to notice that the involvement of the visual field shall be far more complicated than any shortcutting equalisation between garden and painting. Thus, unfortunately, Feng's writing suffers much on this thinking. The visual field as the intermediate zone and to make compensation for the loss of spatial depth in it are the two indispensible keys; thus, before any mindless conclusion is drawn regarding drawing as an approach to make a garden, one has to acknowledge what has been delivered in previous chapters. The visual representation of architecture in ancient Chinese visual culture only achieves the levels of: consistent scale of foreshortening, correlating landscape with architecture, and in object an intention to believe the spatial depth of what is represented in painting is compensated already according to its spatial nature, not in which manner it appears to be in the representation. In this sense, CP, if it does exist, makes no contribution to enhance the appearances of the visual field; because a drawing of a Chinese garden to ignite a poetic sensation is perhaps not about a representation of the visual field at all. A drawing as such can be of artistic creation of imagination, but a garden is by its nature an architectural structure, and it thus must follow the rules of construction that accord with actual vision and thus possibly yield to the transformation of visual field. This thinking echoes the discovery of represented space in Chapters 3 and 4; in both of which, the progress of visual representation stops where pictorial space is of no more purposive patterns of form to 'represent' spatial depth, but of creation of imagination. Drawing as the latter is nothing of spatial sense.

Thirdly, the contradiction that both Stanislaus Fung and Feng Wei propose between drawing and garden is based on the view of perspective. The main body of this thesis has provided strong evidences that Chinese visual culture cannot be reduced to a modern scheme of perspective, but rather is a pack of multiple visual techniques which situate different visual schemes in terms of spatial depth. Perspective is only a particular visual technique; so, although the visual technique of perspective may contradict the visual representation of garden design in a certain manner, it is unwise to denounce the feasibility for the whole visual culture in garden design. All inquiry is about the possibility of taking the manner of garden-viewing as an iconological study on what has been represented in the garden. At last, it becomes a problematic issue as to whether architecture in the Chinese landscape garden, from the very beginning, functions as identical to the making of a visual representation.

It is not expected that a primitive garden to satisfy the joy of hunting and planting will require architecture to be compatible with highly aesthetic principles, unless there are those who wish for a visual scheme of a 'pictorial idea'. Consequently, garden architecture, if truly possible to be built as a painting, requires more careful observation on the historical connection with both verbal and visual sources of making pictorial space in the garden. It is all of these questions to be solved which Feng fails to answer.

7.1.2 Historical Perspective toward Painter and Garden Maker

It is believed that the Chinese landscape garden is always a result of the embodiment of pictorial space, similar to those in Chinese landscape paintings. This point of view may be shared broadly by Chinese modern scholars for several reasons. Firstly, there are large numbers of landscape paintings throughout history that illustrate the garden as their major topics. To review the study in Chapter 4 on the birth of landscape painting, from Wang Wei's 王维 *Wang Chuan Villa* 辋川别业 of the Tang Dynasty, a specific scheme of landscape painting has been formulated for later resemblances. The admiration from the decedents to Wang Wei, regarding him as paradigm of a scholar elite, contributes of course to part of such a ferment; yet, from another

point of view, Wang Wei himself, who is taken as the founder both of scholar-elite landscape painting (as Chapter 3 claims) and of the private house and garden that meet the spiritual requirement of later scholar elites, secures not incidentally the manner by which ancient people highly appreciate. They believe that Chinese landscape architecture is partly an embodiment of their ideal spirit and political aspiration. Consequently, enough competent observers may find that, for most of the pictorial depictions of ordinary life, the exterior space turns out always to be settled in the surrounding of a picturesque landscape garden [Figure 7-2 and Figure 7-3], even if sometimes there were no explicit indication to garden settings of architecture, but with only little plantation and decorative furniture.

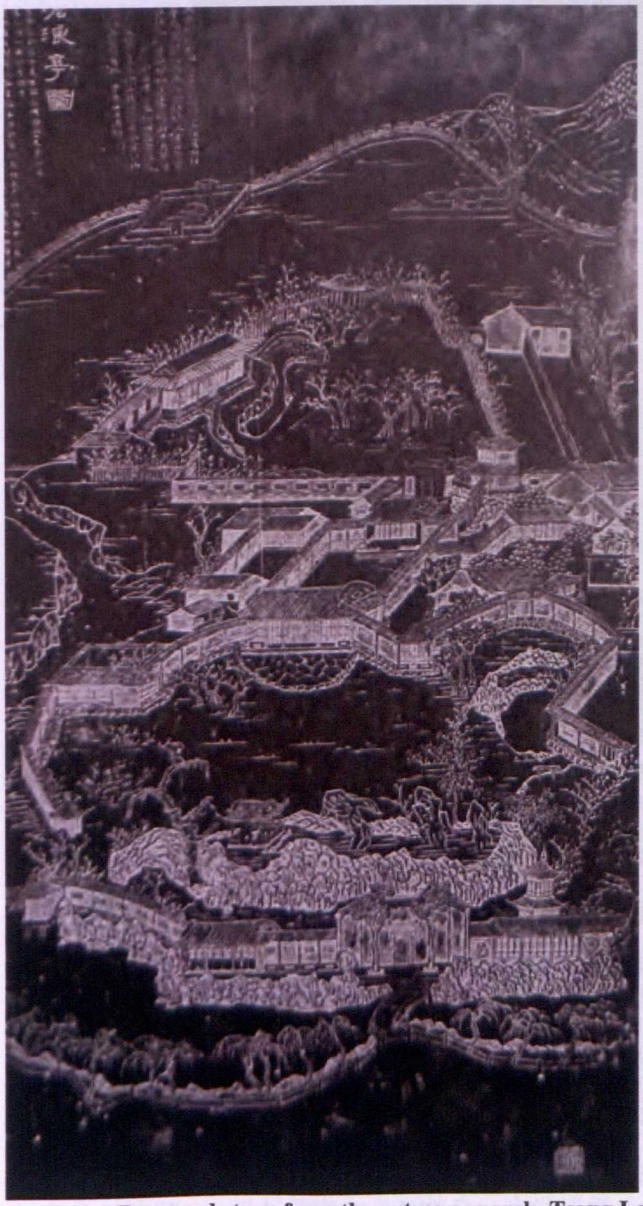

Figure 7-2 Engraved stone from the entrance porch, Tsang Lang Ting 沧浪亭, Su Zhou, AD 1044.

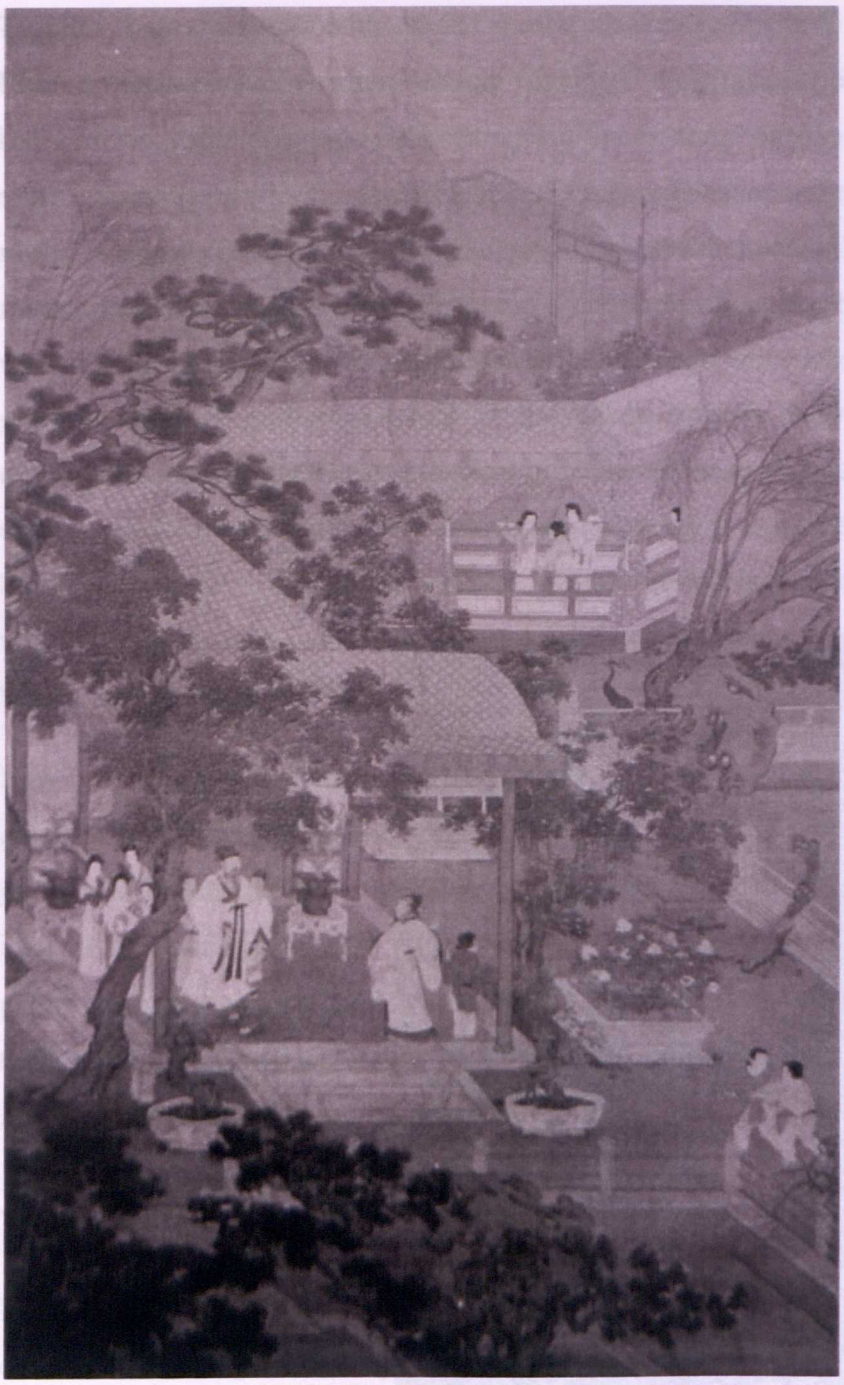

Figure 7-3 Jin Gu Garden of Shi Chong 石崇金谷, by Qiu Ying 仇英, 16th century A.D.

On the other hand, garden-making in Chinese scholar-elite culture is another constituent for the scholar elite's life. The idea that "calligraphy and painting are identical" is thus extended into such a level that scholar elites should have also talent to build a scholar-elite garden within the similar cultural context. That is why Chen Congzhou claims several times in *On Garden* 说园 about the identical features between garden-making and painting.[102] Chen's point of

[102] In Zi Weng Shuo Yuan 梓翁说园, Chen Congzhou explains that the garden-making should follow the law of context and momentum, which are both identical to the principle of painting. 所谓法者，脉络气势之谓，与画理一也 (Beijing: Beijing Publisher, 2003), p.15-16.

view can be found in other early-modern scholarships of Tong Jun 童寯,[103] Chen Zhi 陈植, and the contemporary studies of Peng Yigang 彭一刚 and Zhou Weiquan 周维权. In the similar understanding, Cao Lindi 曹林娣 (2005: 4) even claims that the built environment according to the poetic feeling and pictorial idea of landscape painting is actually one of the most fundamentals for landscape garden.

Last but not least, as Gu Kai 顾凯 (2009:128) discloses, it is truly a matter of fact that the garden makers also specialise in painting; this thinking is especially accurate for those famous builders in the Ming Dynasty when the theory of garden-building endures severe transition in both its practical techniques and theoretical inclination. The four distinguished garden makers of the Late Ming Dynasty, Zhang Nanyang 张南阳, Zhou Danquan 周丹泉, Ji Cheng 计成, and Zhang Lian 张涟, are all experts of translating the skills and tastes of landscape painting into garden design. As the writer of the only garden treatise *The Craft of Gardens* 园冶, Ji Cheng prefaces his garden journey by saying that "[a]s a young man I was known as a painter. I was by nature interested in seeking out the unusual; since I derived most pleasure from the brushes of Guan Tong 关仝 and Jing Hao 荆浩, I paid homage to their style in all my work."[104] To evaluate Zhang Lian's work, Wu Weiye 吴伟业 copies the idea of Tung Chi-Chang (see Figures 4-26 and 4-27 for Tung's contribution to landscape painting) and identifies Zhang's masterpiece as competent enough to deliver the painting style of Huang Gongwang (see Figure 4-21). In this sense, Gu Kai (2010: 129) is insightful to claim that, till the later period of the Ming, the evaluation of the garden is highly attached to the condition as to whether the garden layout can perfectly demonstrate

[103] Tong Jun actually proposes a counter-effect of taking the garden as painting. In his preface of the book *Discourse on Jiangnan Garden* 江南园林志 (Chinese Industry Publisher, 1963), pp.3-4, 12, Tong regards the stone-placing in the garden not simply as it is in a painting which is incapable of indication of actual experience of wandering and getting lost in a garden. Taking the garden as a painting is to induce an inaccurate outsider's view which intrinsically pays more attention to the external expression of form, rather than the internal organisation of space.

[104] Chinese original text goes:
"不佞少以绘名， 性好搜奇，最喜关仝、荆浩笔意，每宗之." English translation is quoted from *The Craft of Gardens* (New Haven: Yale University Press, 1988), p.33.

pictorial ideas of painting. This opinion echoes Wang Yi's 王毅 (2004: 177) discovery that lots of garden designers of the late Ming and Qing Dynasties have abandoned the former principle of learning from the actual environment 外师造化 and, on the contrary, turn to imitate the styles of precedent painting masterpieces. In other words, the garden building by that time has also become a commentatorial creation, which is the same as that of Max Loehr's last division of Chinese visual art.

It is so because of the aforementioned three reasons that the Chinese landscape garden is taken as submissive to the imagery idea and as a by-product of pictorial representation of space. However, with careful examination, Gu Kai (2010) also claims that it is not so until a transition of garden design happens during the late Ming Dynasty. Gu's survey of historical texts suggests that there has been no clear description of introducing theories of painting into garden design before the mid-Ming; instead, the ancient garden designer till the 15th century A.D. may still be inclined to resemble the appearance of the natural environment. This idea still largely exists in later manuscripts. In Gu Kai's (2010:127) opinion, the transition of garden design by gradually emphasising the pictorial idea inaugurates following a self-consciousness in the painting theorists to copy the ancient painting treatises. Wen Cheng-ming uses "经营位置，因见其才," which is borrowed from the ancient painting theory of Hsieh Ho ("plan and design the place and position," see Hsieh Ho's *Six Principles* in Chapter 4). Another key figure, Tung Chi-chang further elaborates the ancient idea as a "garden that can be painted" with a mutual attitude as "painting to be built in garden," while the latter phrase is thus firstly established by him. Tung Chi-chang, when he stimulates the last gigantic change in the stylistic pattern of painting, consequently yet not coincidentally, marks out another significant watershed for garden design. To conclude it, visual image only functions as a complementary tool for garden design before the late Ming. And it seems that from then on, the development of Chinese visual representation of architectural space is seldom found in pictorial art, but rather in the design of the landscape garden.

The gradual emphasis on the appreciation of pictorial idea in garden design thus starts to be parallel to the transition in painting, by which pictorial space in painting becomes much less a representational art, but more of a self-expressional and commentatorial image. The visual analysis in Chapter 4 stops at the time of the late Ming, when painting denounces the possibility to see its spatial depth without any formal visual techniques like perspective. When painting isolates form from distance, purposive pattern from its symbolic meaning, landscape garden steps forward as the other appropriate replacement to take the visual image into architectural space with the aim of representing spatial depth. It is thus reasonable that Gu Kai believes that the very transition to the 'rebirth' of pictorial principles (or a combination of visual techniques and schemes that this study intends to use to translate the term) of painting in the late Ming must attach more importance on *form* as a correlative effect. Accordingly, it is only with a limited allowance for the formal analysis on the visual images of garden, to which the aforementioned transitions in both visual art and garden since the late Ming contribute much.

7.1.3 Drawbacks and Feasibility of Visual Representation in Garden Architecture

The first arising question is about the availability of representation in garden architecture.

As it is quite obvious that, after Tung Chi-chang, a transition in both pictorial style and aesthetic evaluation happens during the late Ming, and a primordial model of mimetic representation has been either abandoned or downgraded to a lower status (see the last part of Chapter 4). In Craig Clunas's (1997: 18) opinion, starting from the 14th century A.D., the "art-historical art" requires the manner of representation to be far more important than the thing represented. Norman Bryson provides another thinking of the visual culture of the Ming. When elaborating on the Chinese painting of Ch'an 禅, he believes that the intention of "emptiness" of Ch'an decides its visual technique as a non-representational solution; because the painting is supposed to be in a way that:

> [It] disfigure[s] the image, the bipolar view, by opening on to the whole force of randomness. As the ink is cast, it flies out of the enclosure or tunnel of the frame, and opens the image on to the field of material transformations that constitutes the universal surround. The flinging of ink marks the surrender of the fixed form of the image to the global configuration of force that subtends it. (Bryson, 1988: 103)

For Bryson, a non-representational art as such suspends a clearly penetrating gaze into pictorial space; because the meaning of gaze has pre-conditions. Lacan identifies the gaze as being capable of cutting across the space of sight; and meanwhile it presumes a frame to provide a visual perimeter. This frame is rather important not only because it resembles the actual vision in an appropriated visual field, but also because of the fact that the pictorial subject in such a painting is centred and targeted, and thus ready for a gaze to penetrate. A Ch'an painting on the contrary betrays this fixed gaze: there is no physical frame for such a painting, as it is a tradition of Chinese visual representation; and also, one can hardly find a target of a subject that suits the visual cone. Thus, it is hopeless to find any purposive patterns of form which have been organised according to certain visual techniques. In fact, what turns out to be in a Ch'an painting is the abolition of self, centre and the negative gaze towards the object; and it requires the observer to go beyond the suggested "frame." The spatial perception thus becomes active in a process of movement which deforms the sense of form.

Clunas identifies that what Bryson has elaborated is just one of the various manners of visual culture during the late-Ming period. It is intrinsically a balance of subject-matter of painting, derived from the mainstream of Chinese art history from the Tang to the late Ming. Through his studies of the political function and social involvement of painting, Clunas believes that the non-representational feature of image during late Ming is not only, as Roger T. Ames says, a result of philosophical thinking of image as reality itself due to

its unbroken linkage between image and what is real,[105] but also, just because of this link, a demonstration for that to destruct the fixed configuration in painting can "derange the social and cultural order through their obscene or lascivious content" (Clunas, 1997:133).

It thus seems that it would be better not to regard space of a Chinese landscape garden from the late Ming as a representational art of form. Yet with careful observation, this drawback is not too bleak to overturn the attempt of visual analysis on architecture in the garden.

As explained in the last session, the self-consciousness of the garden to share pictorial ideas of painting did not begin until the late Ming, when both garden owners and builders began to accept the guidance of painting. However, in most of the time, what the writings about the pictorial idea in garden design actually mention is the construction of a rocky mountain, not the whole garden constituents. Among the four traditional aspects of garden design, the construction of the rocky mountain, the treatment of the water area, the plantation, and the architecture (叠山, 理水, 花木, 建筑), the former three are severely influenced by the transition in pictorial idea, leaving the fourth, but fortunately more critical for the spatial representation addressed in this thesis, untouched by pictorial treatments. For example, in *The Craft of Gardens*, Ji Cheng proposes that the rocky mountain should have the texture of *C'un* 皴, a typical brush style that is made use of in the painting of the Ming.[106] This is

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[105] Roger T. Ames, 'Meaning as Imaging: Prolegomena to a Confucian Epistemology' in *Culture and Modernity: East-West Philosophical Perspectives*, ed. Eliot Deutsch (Honolulu, 1990), pp.227-44. In this paper, Ames writes with an insightful paragraph about how image and representation are considered as in Chinese traditional Confucian thinking: "In our tradition, image in the vernacular combines the notions of perception and imagination, where the mimetic, representative, figurative, and fictive connotations of image are derived from the ontological disparity between a transcendentally 'real' world and the concrete world of experience. The absence of such ontological disparity in the Confucian model will mean that image is the presentation rather than the representation of a configured world at concrete, literal, and historical level ... The meaning resident in the image as established is the act of establishing the image itself. Contrary to one's own naive expectations ... what one finally 'sees' in a work of art is the creative act that produced it. The creative process, not the object, is the repository of meaning. What is imaged is the process."

[106]Chinese text is "理者相石皴纹，仿古人笔意," translated as "The designer should follow the natural cracks in the stone, imitating the brushwork of the old masters" (The Craft of Gardens, 1988: 109). For a more verbal connection between painting and garden, see Gu Kai's PhD dissertation *The Study on Gardens of Jiangnan area in Ming Dynasty: The Principles*

not the only instance of the same period that addresses a rock as a pictorial discourse. The reason for the revelation of the rocky mountain, water and plantation as the media of the pictorial idea could possibly be traced back to the long tradition of their existence in landscape painting. In such kind of image, architecture, to a large extent, constitutes only as a decorative part in the whole composition. The situation does not change, even in *Jie Hua* 界画, in which architecture is marvellously depicted and thus occupies most of the pictorial space. The truth is that architecture never achieves a consistent inter-connection with the surrounding landscape. It is singled out as an individual subject in later paintings. What is more, the tradition of the realistic representation of the Sung Dynasty has long been lost and never come over again [Figure 3-17]. Even in *Qing Ming scroll*, which has a comparison in the scale of the apparent sizes of objects to make such a connection between architecture and landscape visible, the fact that the scale is not consistent enough betrays a realistic imitation to what the sceneries along the river bank appear to be in a supposed visual field. Consequently, although landscape features have already begun to have self-consciousness in the rebirth of ancient pictorial principles, architecture itself has not yet gained its autonomy to demonstrate a picturesque idea of painting. Architecture is still constructible in both its structure and appearance in vision. In this sense, one has to wait till the late Ming to find a successive change in the role of architecture according to the whole 'play script' of garden design.

Not until the mid-Ming was architecture raised up from its submissive position as lastly considered in garden manuscripts. It is partly because, as Clunas proposes in his book *Fruitful Sites*, that the agricultural function of a garden still overwhelms its aesthetic significance in the early Ming. From Wen Cheng-ming's depiction for the *Garden of the Unsuccessful Politician* 拙政园 in Suzhou, one can quickly identify the garden to be more like a farmland, not the same as the composition it is today [Figure 7-4 and Figure 7-5].

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*and Making of Landscape Garden*明代江南园林研究——园林观念与造园实践 (Southeast University, 2008), pp.145-6.

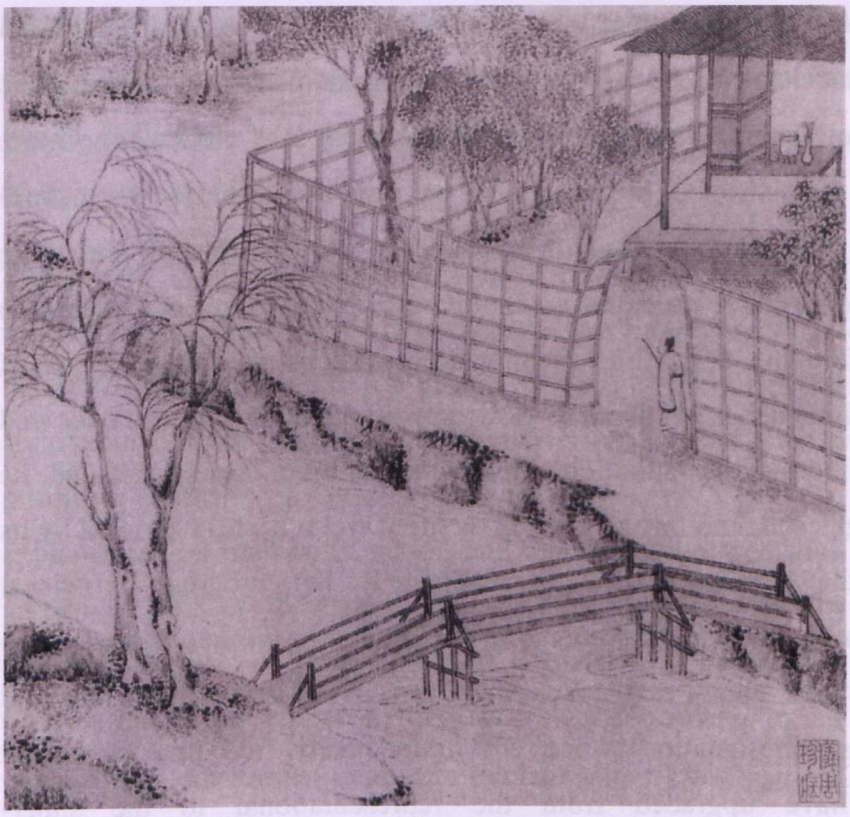

Figure 7-4 Little Surging Waves 小沧浪, Wen Zhengming.

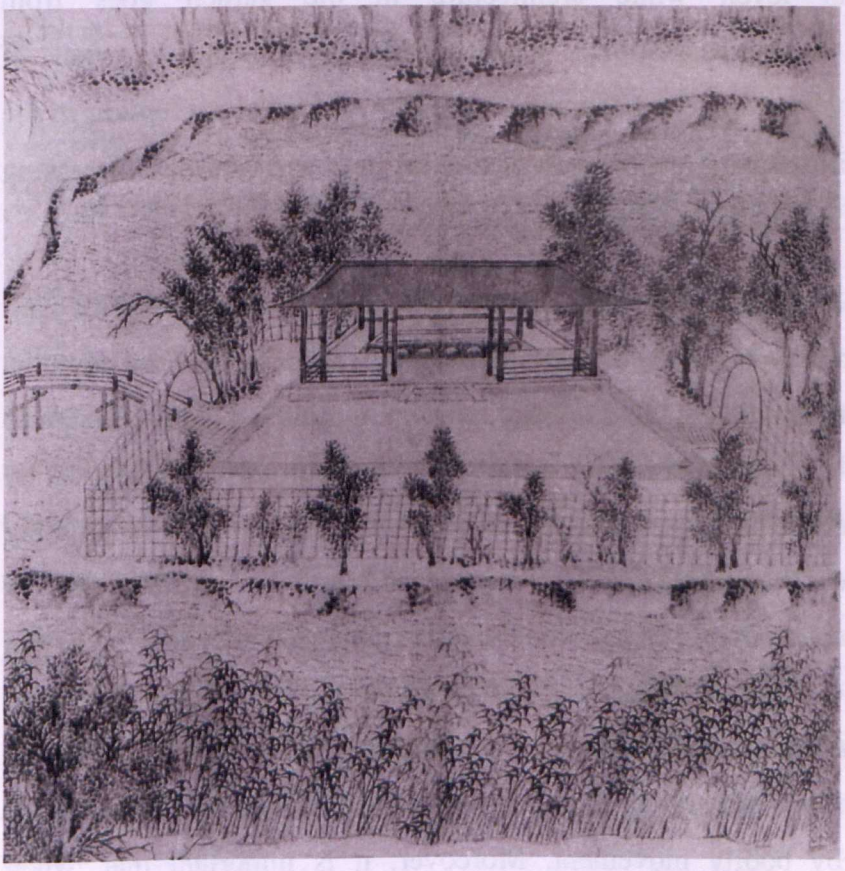

Figure 7-5 Many Fragrances Bank (Fan xiang wu). Figures 7-4 and 7-5 are quoted from the album The Garden of the Unsuccessful Politician (Zhuo Zheng yuan tu ce 拙政园图册), version dated 1551. Metropolitan Museum of Art, New York.

Thus the transition of a garden from a fruit plantation to an aesthetic literati landscape coincides with the rebirth of pictorial principles which demand the construction of the correspondingly beautiful scenes in a garden. The more delicate and sophisticated it appears to be, the less capable the natural landscape is of representing *picturesqueness* on its own behalf, the more intensively architectural structures are involved with it. As Gu Kai (2010: 128) observes, before the mid-Ming, architecture functions only as a dispersed installation where beholders stand to view; now in the late-Ming it is endowed with outstanding pictorial attention. Architecture is more largely installed, its density strengthened, and formal ideas diversified, yet it is still restricted by its feature of the feasibility in construction. If the progress in visual representation of the four constituents of the garden in the late Ming can be divided into three levels as the constructional, visual-representational, and visually super-representational, one will immediately find that all except architecture have upgraded from the representational to the super-representational level, while architecture in the garden goes from constructional to representational. Consequently, to indicate a variety of purposive visual phenomena becomes a necessity of spatial perception in the garden; so is it to spatial depth. And of course, both associate the increasing manipulation of visual presentation of form in architecture.

To paraphrase, by stating a formal analysis, one has to admit a negative fact: the Chinese landscape garden of the late Ming positions itself in the dilemma of three contradictions. On the one hand, while it is time for garden design to introduce pictorial principles of painting by which formal configuration by visual techniques becomes an indispensible part, the transition of the painting style has already disfavoured the last breath of "formal likeness" of representational art. On the other hand, when a frame provides observers with safety for the perception of location and distance, both non-representational painting or even landscape garden may be inclined to dissolve such a "frame" for the representational "gaze" and thus accomplish a larger pictorial space lying behind by bodily movement. Moreover, it is important that, when architecture gradually takes a more essential role in garden design, it contributes to a more consistent spatial perception of depth; but

simultaneously, it disengages form away from its constructional function and further favours a possible explanation as an art of representation. In other words, both form and visual techniques become available for such a visual study on the actual space.

Thus, even though art historians have reluctance in accepting that non-representational purposes of visual image are increasingly preferred through the period of the Ming, Gu Kai (2009) insightfully identifies the application of architecture in the garden as a counter-effect against such transition. The primitive "cottage in the fruitful garden" now deserves more formal explanations on both construction and representation; and thus any available garden treatise of that time is thus fully complemented by architectural thinking of both. To some extent, it is the rebirth of pictorial principles of Chinese landscape representation that greatly contributes to the establishment of the systematic garden treatise in the late Ming: *The Craft of Gardens* 园冶. One can say, the dominance of the pictorial idea cradles the representational architecture in the garden.

7.2 The Craft of Gardens: Architecture as Purposive Patterns of Spatial Depth in the Appropriated Visual Field

Although there is much literature in garden history, Ji Cheng, who was born in 1582 A.D., is actually the first Chinese garden theorist to exclusively compile garden methodology in a designer's eye. He once occasionally built a rocky mountain for friends when back from a distant journey to his homeland in a Chinese southern district. *The Craft of Gardens* is identified to be the consequence of his yearly study on historical sources of garden-making. The masterpiece is comprised of three parts. The first includes the theory of the garden, layout, building and other non-structural features; the second mentions about categories of the balustrade; and the third talks about windows, walls, pavements, and also the method to build a rocky mountain, choose stone and borrow the scenery.

In the first part, Ji Cheng provides the twin-spirits in constructing a garden, as Stanislaus Fung elaborates, *the appropriateness [interdependence] of body,*

and *borrowing the scenery* 体宜因借.[107] It is explicit that Ji mentions several times about how to treat spatial depth when using architectural forms. When explaining the *appropriateness*, he takes the path hidden away, for instance, and suggests that, to render such a route with a feeling of distance, the orientation of the path should be twisted and turned back and forth according to the allowance of the land. Not coincidentally, *borrowing the scenery* is another compatible visual scheme to accentuate or eliminate the difference between exterior and interior, the distant view and the close-up scenery. To resolve such visual phenomena, it is necessary to intentionally block or show up the appropriated vision by means of any available landscape and structures. In other words, to achieve the visual schemes, a garden designer must be able to transform architecture and landscape into purposive patterns of form which are organised according to special rules of visual techniques. So how can one ensure such *appropriateness* by *borrowing the scenery*?

In the section *On Garden*, Ji Cheng further suggests several visual features of spatial depth, such as "if you climb a tower on a hill-top to gaze into the distance, nothing but beauty will meet your eyes 山楼远, 纵目皆然," "with hillsides as tapestries and mountains as screens, set up a thousand feet of emerald slopes 障锦山屏, 列千寻耸翠" (however, this part of the translation might be wrong, because Ji Cheng might take the image on a painted screen or curtain metaphorically as the backdrop of a beautiful mountain), "shadowy temples should appear through round windows [like a painting] 刹宇隐环窗," and "if distant mountain ranges can be included in the view, their fresh beauty is there for you to absorb 远峰偏宜借景, 秀色堪餐" (1988: 43). On the

[107] Chinese full text is "因者, 随基势高下, 体形之端正 ...互相借资 ... 不妨偏径, 顿置婉转, 斯谓'精而合宜'者也.借者, 园虽别内外, 得景则无拘远近 ... 极目所至, 俗则屏之, 嘉则收之, 不分町畽, 尽为烟景, 斯所谓'巧而得体'者也." In Alison Hardie's English version of *The Craft of Gardens*, these two features are translated as *suitability*, and *to borrow from the scenery*. The first is quoted as "designing in accordance with the rise and fall of the natural contours, to accentuate their intrinsic form ... so that [they may] borrow value from the other ... It does not matter if the paths are hidden away; in fact they should be laid out so that they twist and turn with the land; this is what is meant by artistry through suitability." For the latter, it means the situation that, "although the interior of a garden is distinct from what lies outside it ... you need not be concerned whether this is close by or far away ... Wherever the view within your sight is vulgar, block it off, but where it is beautiful, take advantage of it; never mind if it is just of empty fields, make use of it all as a misty background ..."(1988: 39-40). For Stanislaus Fung's translation of 因 as interdependence, see his co-writing paper 'Dualism and Polarism: Structures of Architectural and Landscape Architectural Discourse in China and the West' in *Interstices*, Vol. 04 (Auckland: 1996), pp.1-22.

construction of the hall, it is normally allocated with three or four spans 间, while always with another half span, because "whether the building is secretive and convoluted ... all depends on this half span, which gives the impression of a region of illusion 深奥曲折, 通前达後, 全在斯半间中, 生出幻境也" (1988: 58). For the deployment of the corridor, the author prefers a random installation in favour of a natural and zigzag formation, which he believes provides an indispensible view of the garden.[108] When other non-structural features are involved, they are also in need of special treatments:

> "... wooden walls should have many window-openings so that one can secretly enjoy looking through them into different worlds, as if in a magic flask. Pavilions and terraces should be visible through a crack, while towers and tall buildings should be surrounded by empty space. Where you think there is nothing more to see, the scenery should suddenly open out, and low-lying areas should unexpectedly slope upwards 板壁常空, 隐出别壶之天地. 亭台影罅, 楼阁虚邻. 绝处犹开, 低方忽上" (Ji Cheng, 1988:76).

At the end of the writing, Ji Cheng finally suggests that *borrowing the scenery* is the most vital characteristic to garden design. There are several aspects of it, such as borrowing the scenery in the distance, close at hand, from above or from below; and obviously their deployments also require taking into consideration the particular and appropriate time through the year.[109]

In fact, Ji Cheng's elaboration of how to borrow the scenery is neither explicit enough nor intensive. The comparatively short explanation for such an essential feature in garden design is prefaced by a long paragraph of description of poetic feeling when enjoying the beauty in the garden. The text is full of poetic associations between garden sceneries and the stories of paradigm scholar elites, or the thinking-provoking natural landscape; and it thus seems to place a negative attitude towards a visual understanding of actual spatial relationship that this thesis intends to provide. However, what is the *borrowing the scenery* exactly? For Wang Yi 王毅 (2004: 289), the

[108] "廊房基...任高低曲折, 自然断续蜿蜒, 园林中不可少斯一断境界."
[109] "夫借景, 林园之最要者也. 如远借, 邻界, 仰借, 俯借, 应时而借."

essence of "borrowing" is to embrace the unlimited universe and to surmount the actual enclosure in the garden. This kind of ontological thinking is finally available due to the transition from Dong Zhoushu's 董仲舒 thinking on the highly organised hierarchy of the external universe during the Han to the later New-Confucius study on the rituals of the Sung and Ming, which insists such universe be constructed and harmonised with the inner spirit and the human body. In other words, *borrowing the scenery* for later scholar elites and garden builders is a necessary approach to harmonise with the universe (Wang, 2004: 302-3). Stanislaus Fung (1996) has thus examined the possibility to take *borrowing the scenery* as a visual demonstration of "interdependence and appropriateness" of the body. In his opinion, both borrowing and appropriating are not for sure associated with certain fixed visual patterns of form; and there is a mutual influence between "borrowing" and the things borrowed, not only because the term conveys a dual possibility of "adopting" and "blocking out" sceneries, but also due to the philosophical significance of "borrowing" as an artistic creation during a flux of changing patterns.

And this artistic creation is truly in need of a particular spectator, talented and literate, who is capable of *borrowing the scenery* and beautifying it by expanding vision into a formless and poetic visual field, which arouses and fuses sentiment with scenery as if the observer were touching it by the eye, that is *chu jing sheng qing* 触景生情. In Fung's (1996) opinion, this borrowing can only happen when the intentions and scenery are co-arising and then co-presenting when "in further conjunctions of sentiment and scenery." This is in fact a basis of Chinese visual culture in the literature tradition; it reminds us of the various visual methods of representation. Especially when taking vision as a procedure of motion and duration, what really matters here is not the legibility of the image, but the movement of the eyes which makes an image (on paper or in the garden) visible and understandable.[110] Thus, the sense of spatial depth depends on the "remoteness" and "stillness," and also "correlate[s] with winding movement" (Fung, 2003: 260). Due to the

[110] See section 2.1.2, Chapter 2 of this thesis: *The Methods to Perceive Chinese Representation*. For the examination of Chinese character for vision, *jian* 见, and its meaning in the visual culture of garden, see Stanislaus Fung's paper *Dualism and Polarism* (1996).

involvement of sentiment, scenery, movement, and *borrowing* according to intentions of a symbolic idea or just unexpected usage of the available pictorial forms, vision is thus unsettled and transformed; and the gaze is expanded as well.

This expanded gaze must follow the restrictive visual scheme of *borrowing*, which is "adopting" and "blocking out," while in accordance with the appropriateness of the body which requires architectural structures "be laid out so that they twist and turn with the land" in order to present the "artistry through suitability" (Ji Cheng, 1988: 39-40). In fact, to present the sense of distance by twisting and turning spatial orientation has already been taken as a customary description of space in Chinese literature. The poet Chang Jian 常建 praises a Zen garden of the Tang Dynasty as "twisting path extends into the peaceful place, where Buddhist house is deeply covered by flowers and trees 曲径通幽处，禅房花木深." Another famous scholar elite Liu Zongyuan 柳宗元, who enjoys the space along East Hill in Long Xing Temple, comments that both the water pavilion and elongated chamber are twisting with sophisticated taste.[111] Wen Zhenheng 文震亨 also prefers the twisting chamber and sophisticated room for spatial orientation.[112] Not coincidentally, *Twisting* and *Turning* as a method for presenting the sense of distance can also be found throughout the writing of *The Craft of Gardens*.

If *The Craft of Gardens* is truly based on pictorial principles of visual representation of space in visual art, one can immediately understand that this effect of *twisting and turning* echoes the painting theories of a long time ago, which always talk about the possibility of creating a spatial recession, consistent or not, that is made by the wandering outlines of river banks, profiles of rocky mountains which extend into the level-distance, and depth-distance as Kuo Hsi proposes [see Figure 4-18]. The level-distance of Huang Kung-wang to a certain extent is just demonstrated by the zigzag outlines of

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[111] Chinese text is quoted as "水亭狭室，曲有奥趣" in Liu's poetry *Discourse on East Hill of Long Xing Si in Yong Zhou County* 永州龙兴寺东丘记.

[112] Wen Zhenheng, *Treatises on Superfluous Things* 长物志, revised and noted version by Chen Zhi 陈植 (Nanjing: Jiangsu Science and Technology Publisher, 1984), p.347, "曲房奥室，各有所宜."

the lakeside [see Figure 4-23], which are gradually foreshortened in their apparent sizes.

The content addressing *twisting and turning* in *The Craft of Gardens* is of high importance: first, it acknowledges architecture as the indispensible body of garden design, contradicting those writings that favour the natural landscape; second, it also sets up formulae for architectural orientation of *twisting* and *turning*. They have thus become a customary visual technique to organise patterns of spatial depth. This emphasis on the function of architecture is parallel to the transition in garden style; as Gu Kai (1999) examines, the garden is more and more a visual presentation for the scholarly connoisseurship. To enhance the visual effect of spatial depth, a large number of covered corridors were installed during the late Ming; yet, before then, the sense of the twisting path relies mainly on the deployment of natural landscape like stones and trees. Now it turns to architecture. Thus, in the Chinese landscape garden since the late Ming, pictorial principles have been reborn and altered; and the principal scheme of the garden is not only to represent a pictorial idea like that of painting, but also to formulate an actual process for garden users to step into the twisting architectural enclosure in favour of such pictorial ideas. Thus, the visual images in the garden seem not simply representational, but also structure-based to hold such representation which accords with the construction of the visual field acquired from scenery. It has rather a similar function like a screen or a painting that is screened inside. And it relies on the twisting architecture to borrow the appropriate scenery within this screen.

For modern scholars, when the appropriate scenery correlates with twisting corridors, it appears to be the very visual phenomenon, the so-called *changing the scenery when moving* 移步换景. This term is actually borrowed from another similar word, 移步换形, which has often been paraphrased in ancient texts. Sung scholar elite Li Dong 李侗 once mentions about the perception of *Fung Shui* 风水 as it always transforms the apparent forms when the observer

is changing position.[113] Also, it appears in Zhao Yi's 赵翼 poetry for the *Mountain Lu* 庐山,[114] and Wang Bai's 王柏 (1197-1274) diary on a private house.[115] Both the words for changing scenery and form are used by literati scholar elites and later garden builders in order to describe a complicated phenomenon of visual transformation. It appears in modern texts much more frequently, and thus is contributed as part of the visual effects in the landscape garden. Chen Congzhou stands as the most influential figure for such understanding. Again, he prefers to associate transforming scenery with architectural structures in order to provide a pictorial sense of spatial depth. Chen (2003: 5) once claimed that the twisting corridor can strengthen the interest and duration of the experience in the garden. Meanwhile, such a twisting and turning path should have borrowed scenes on both sides 使行者左右顾盼有景. Reasonably, it is expected that the manipulation of *borrowing the scenery* in the exterior is mainly derived from the orientation of *twisting and turning* corridors.

Thus, impressively, most of the contents in *The Craft of Gardens* that address *twisting and turning* are about the construction of the corridor, the path, and the specified 'half span' of the hall; in other words, it is all about architectural structure and layout. This interesting phenomenon of making spatial depth within a highly limited area has been explained by Wang Yi. Wang (2004: 149), who believes that, to accomplish an effect to "contain sky and earth into a pot 壶中天地," it relies on the prevalence and delicacy of *joinery work* 小木作 of the Chinese wooden architecture. Garden designers have taken advantages of those "little" and "trivial" structures. They, on the one hand, enhance the integrity and artesian form of Chinese architecture and on the other hand enrich the styles of spatial compartmentalisation. And the latter function is highly made use of for *borrowing the scenery* in garden design. Also, Wang (2004: 419) discredits it as a negative progress to indulge with

[113] See *Li yan ping ji*, "李延平集·三·答问下: "看风水，移步换形 (when observing *Fung Shui*, its form transforms when my position changes)."
[114] See Zhao Yi's (1727-1814) text, *Ou bei shi hua*, "瓯北诗话·七言古四·庐山纪游: "我来历遍诸方丈，移步换形莫名状 (let me go through mountains top [in the sea of cloud] while their appearances transform without clarification)."
[115] See *Lu zhai ji* , "鲁斋集·七·答叶通斋: "随步换形，各有攸当 (when form is transforming, it is thus appropriate)."

extreme sub-division of spatial depth in later gardens. In his opinion, due to the reluctance to learn pictorial ideas from the natural environment and an overemphasis over the twisting spatial orientation, *borrowing the scenery* has gone against its original but righteous pictorial purpose and thus become a hypocritical and presumptuous manner. For later periods of garden design, it is thus a hindrance rather than an advantage, in spite of the prosperity in methodology of presenting spatial depth.

Apart from that, many other scholar elites still welcome *joinery work* as the appropriate method to present spatial depth when *borrowing the scenery*. The function of it has been emphasised through ancient literature and modern studies. Among them, Wen Zhen-heng's 文震亨 (1585-1645) *Treatise on Superfluous Things* 长物志 (1984, notes by Chen Zhi 陈植) is the most explicit that makes a documentary of the installation of joinery work in the garden. The first chapter of the book, *On House* 室庐, includes treatises on doors, steps, windows, balustrades, screens and other non-structural features; and as pertinent connotations that Chen adds disclose, there is clearly a deliberation to confuse the perception of spatial depth by means of these structures. For example, Chen explains the screen wall 照壁 as a customary half-void installation in Ming chambers, comprised of holes on windows and wooden panels instead of a masonry wall.[116] In the chapter *On Position*, Wen (1984: 350, 351) prefers to place one but only one screen to enrich the visualisation in the chamber. In this sense, the perception of interior spatial depth has to be purposively controlled in favour of the best visual effect. Regarding the position of painting, it is better to place painting against the scenes outside in order to indicate their correlating synthesis. It is thus obvious in the *Treatise* that the *twisting and turning* of vision must be carefully deployed by means of arousing the visual synthesis between architectural structures and their decorative attachments. Similarly, there are large amounts of descriptions in Shen Fu's 沈复 (1763-1825) text of *Six Chapters of a Floating Life* 浮生六记[117] that address the sense of spatial depth as the result

[116] Chinese text is quoted as "明间后方多用屏门, 窗格或木板为虚壁 ..." (Wen, 1984: 26).
[117] English translation (Oxford: Oxford University Press, 1960) is translated by Lin Yutang 林语堂.

of the wall covered by flowers and the unexpected show-up of courtyards by the corner of the doorway. Similarly, both the writings of Wen Zhen-heng and Shen Fu remind us of the installation of the (painted) screen in either the exterior or interior space to blur the sense of spatial orientation. It is same as the mirror reflection of Chapter 6 that is capable of making spatial illusions that are short of station points. A frame of a window on the semi-hollow wall is just like a screen settled in a garden. It provides a definite division of space as front and back, sometimes extending into a landscape close by or in the far distance, but in the meantime blurs the connection between them with its semi-transparent veil.

Osvald Siren (1948) believes that walls and pavilions are among the most typical elements of Chinese architecture. When elaborating the role of the wall, he is actually co-mentioning about the opening on it like a window; and, for the pavilion, he correlates it with *l'ang-tzu* 廊子, the corridor. Both structures have identical influence on visual presentation:

> "Their continuous [feature] emphasize the enclosing and framing function ... and their transparency contributes to the picturesque interplay of light and shade which is so essential to buildings in gardens.
>
> [Paraphrasing Ji Cheng's text] The views seen through these apertures [on the wall] should appear unexpected or surprising, and direct the attention to certain points ... windows may be provided with polished decoration. One should be secluded from all neighbours, but at the same time have a view of the landscape in all directions ... [These openings] scarcely enable to obtain a coherent view of the surrounding scenery ..." (Siren, 1948: 253-7).

Figure 7-6 Chinese Courtyard in the Style of the Ming Dynasty, designed by Chen Congzhou, Metropolitan Museum of Art, New York. Photo website Link: http://www.metmuseum.org/collections/galleries/asian/217

Siren thus claims both the openings on the wall and twisting corridors as capable of indicating particular borrowed scenery. As another modern exemplar, Chen Congzhou (2003: 34) also believes that the sense of spatial depth in the garden and in architecture is derived from the compartmentalisation of little structures, such as the fake mountain, corridor, bridge, decorated wall, screen, curtain, book shelf, and other furniture addressing a similar purpose. He once mentions about his work of Chinese garden, the *Astor Court* at the Metropolitan Museum of Art in New York [Figure 7-6]. In this modern duplication of a Ming-style garden, which is fully enclosed on the first floor, Chen (2003: 47) notices that it is impossible for

him to borrow any scenery from outside. He thus decides to block out the exterior by means of surrounding high walls, and make compartments within the garden to enhance the purposive perception of spatial depth and pictorial idea.[118]

To sum up, to present the sense of various spatial depths in the Chinese garden is traditional in both ancient texts and actual landscape; however, it is only from the late Ming that architecture began to play an indispensible role in such spatial representation. The populace of architecture as such results from the development of *joinery work* since the Sung, and the transition from a grand encompassment of natural landscape to the later favourite artificial landscape within limited environment. With such intention, garden makers notice that it is necessary to consider *appropriateness of body* and *borrowing the scenery*, both of which, when enhanced by joinery architecture, prefer to deploy the elements like corridor and wall in a *twisting and turning* manner. This manner results in the expansion of vision and the transformation of what is observed into a similar visual representation like painting, which is full of pictorial ideas. For the garden since the late Ming, architecture is the key for the rebirth of ancient pictorial principles. And in this way, as Gu Kai (1999) insightfully explains, it is due to the conjunction of corridor with partition wall, door hole, window opening and screen, all of which are typical architectural structures, that the garden since the late Ming has had a creative and brand-new appearance in its spatial compartmentalisation, correlation, communication, infiltration, gradation and contradicting effect.

Just because of that, any expected attempt to disclose the potential visual representation in the Chinese landscape garden must take into consideration an example of the late Ming when both the roles of pictorial principles of visual techniques and forms of architecture are changing and correlating with each other.

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[118] For a detailed description of this garden, see Alfreda Murck and Wen Fong's book *A Chinese Garden Court: The Astor Court at the Metropolitan Museum of Art* (New York: The Museum of Modern Art, 1980).

7.3 The Lingering Garden: A Case Study of Visual Representation in the Chinese Landscape Garden of the Late Ming Period

In this sense, *Lingering Garden* 留园 [Figure 7-7] in Suzhou turns out to be a perfect source for the case study of visual representation in garden. *Lingering Garden* is one of the four most distinguished traditional gardens in China: the other three are *Garden of the Unsuccessful Politician* also in Suzhou, *The Mountain Resort and its Outlying Temples* in Chengde, and the great *Summer Palace* in Beijing. Among these four cases, only *Lingering Garden* and *Garden of the Unsuccessful Politician* are originally built around the late Ming; and, if further comparing them, *Lingering Garden* has much more tiny but delicate treatment in the conjunctional part of the garden and joinery work of architecture for the perception of spatial depth. Peng Yigang (1986: 30) notices that most of the landscape gardens in China favour connect architecture with wandering corridors; but, on the contrary, the entrance part of *Lingering Garden* indicates a different manner – the connections are all done by small-scale architecture (and/or joinery work of architecture). This treatment thus provides the first impression of the garden inside with unexpectedly superfluous visual effect and spatial orientation of compartmentalisation and infiltration.

Figure 7-7 Photo of Lingering Garden, with the area of the case study to the right (Liu Dunzhen, 2005: 360).

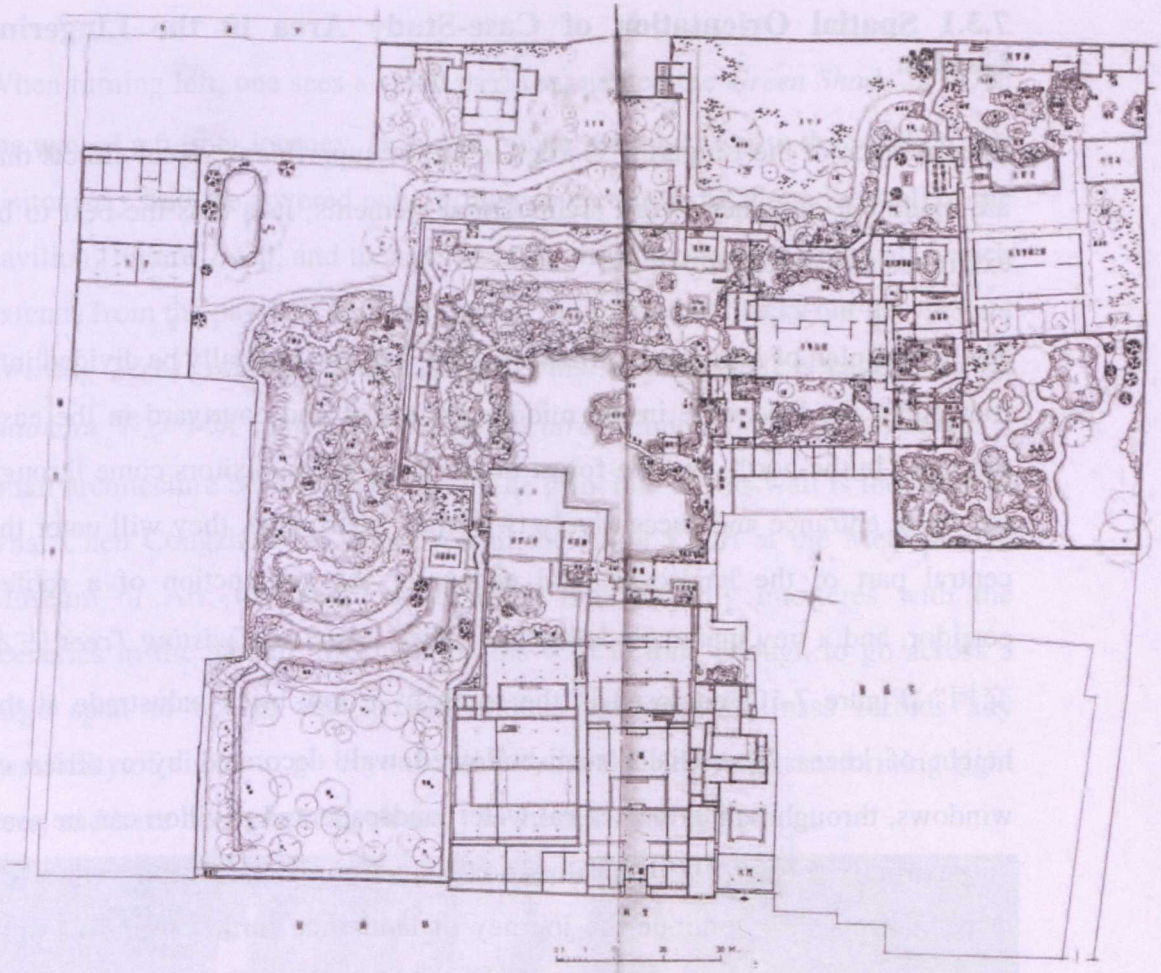


Figure 7-8 Plan of Lingering Garden. From Liu Dunzhen, Classical Garden in Suzhou 苏州古典园林 (Beijing: Chinese Architecture and Industry Publisher, 1986), pp.348-9.

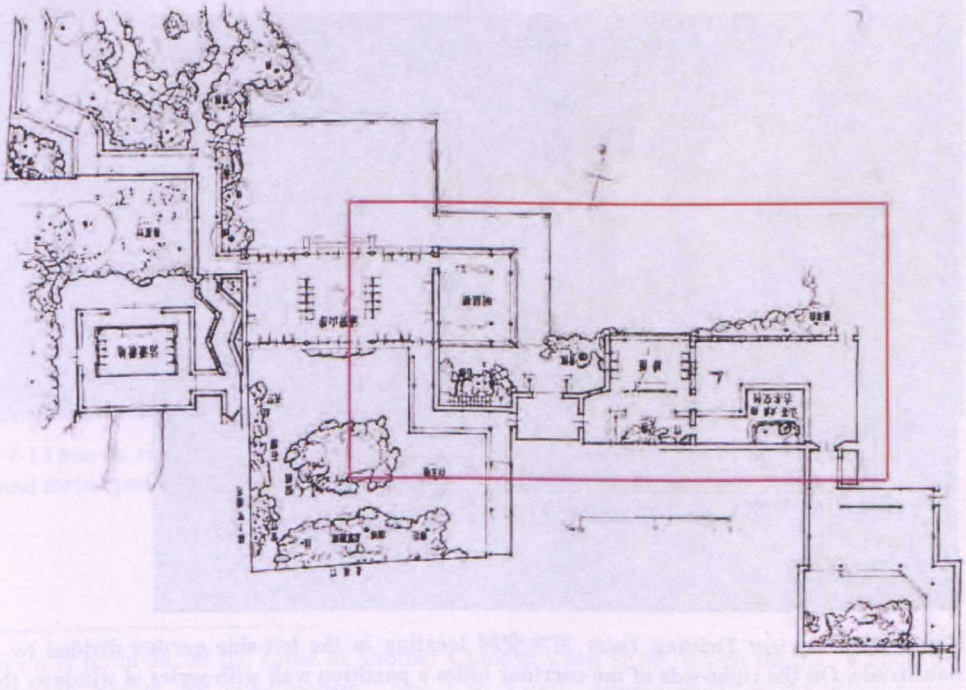


Figure 7-9 Selected Part of Space for Case Study in Lingering Garden (Liu Dunzhen, 2005: 372).

7.3.1 Spatial Orientation of Case-Study Area in the Lingering Garden

The entrance of the Lingering Garden is full of superfluous visual effects that are made out of joinery-work architectural elements; it is thus the best to be examined as a case study of C-P.

The whole plan of *Lingering Garden* [Figure 7-8] can basically be divided into four parts: the landscape in the middle, residence and courtyard in the east, farmland in the north, and the forest in the west. When visitors come through the south entrance and successively two small courtyards, they will enter the central part of the landscape, and encounter the conjunction of a roofed corridor, and a tiny manmade landscape called "A*ncient Twisting Trees* 古木交柯" [Figure 7-10] enclosed in the south by a low brick balustrade at the height of knees. There is a semi-hollowed wall decorated by a series of windows, through which the central water landscape and pavilion can be seen only partially [Figure 7-11]. Visitors now should make a decision to turn left or right, that is, to continue the journey of landscape further to the western forest or follow the long corridor to the main hall in the east. The selected area for the case study is located just along the left side of this turning point [Figure 7-9]. The visual sequence is shown by Appendix 6.

Figure 7-10 ***Ancient Twisting Trees*** **古木交柯 locating in the left-side garden divided by zigzag balustrade. On the right-side of the corridor hides a partition wall with series of windows that can peer into external landscape.**

When turning left, one sees a small pavilion, named the *Green Shade* 绿荫, in the way of a further journey. However, when getting closer to the pavilion, the visitor may find the covered path turning south a little bit along the wall of the pavilion [Figure 7-12], and then penetrating the compartment of a wall, which extends from the pavilion onto the wall in the south that blacks out the *Ancient Twisting Trees* from the outside world. This southern wall is called *hua bu xiao zhu* 华步小筑 (*Small Dock Architecture*) [Figure 7-13], which means a small architecture beside the dock.[119] The principle of this wall is the same as what Chen Congzhou has employed in the Astor Court at the Metropolitan Museum of Art: to block out anything that possibly interferes with the sceneries in the garden. Meanwhile, this wall is long enough to go across a large span of space; and its tremendous existence of mass forbids any possibility of vision to go beyond: all the visual fields stop transforming right here, and have been pushed solemnly to the northern landscape.

Figure 7-13 *hua bu xiao zhu* 华步小筑 (Small Dock Architecture) with a giant wall to block outside world and forbid penetrating view.

[119] *Hua bu* is pronounced the same as another Chinese word 花埠, which means "a dock for disembarking timber for construction." See Cao Lindi, *Appreciation of the Plaque and couplets in Suzhou Gardens* 苏州园林匾额楹联鉴赏(Beijing: Hua Xia Publication, 1991), p.194.

Referring back to the *Green Shade*, when visitors follow the twisting corridor and pass through the gate into the sub-divided courtyard beside the *Green Shade*, they may find an interesting visual phenomenon, in that the *Ancient Twisting Trees* is following along their left side; which means landscape also penetrates the compartment and co-enjoys the next interplay.

Figure 3-14 Aperture on the wall, allowing landscape penetrating to accompany visitors aside.

Figure 7-15 A few stone step indicates hidden connection between architecture of *Green Shade* and landscape of *Small Dock Architecture*. It makes possible a returning route back to entrance garden.

It is so because the garden designer not only opens a doorway for visitors, but also a "door," or an aperture, for the landscape to pass through [Figure 7-14]. This phenomenon is rarely seen in other landscape gardens. Ordinarily, when the landscape is allocated on either side of the corridor, it stops when the corridor extends into another scenery setting. However, on the contrary, the landscape *Ancient Twisting Trees* provides the consistent vision for visitors standing at either side of the blocking wall along the *Green Shade*. Behind it, a few stone steps downwards into the landscape finally reveal the hidden connection between *Ancient Twisting Trees* and the corridor [Figure 7-15]: if visitors wish to enter the landscape, they have to circle around the penetrating gate of the *Green Shade* and turn back through another gate for the landscape. The journey in this limited area is thus extended.

Meanwhile, the *Green Shade* pavilion has a rather typical composition of architecture, joinery structure and the surrounding landscape. The wall between the pavilion and corridor has two holes for the convenience of peering into the small area [Figure 7-12]. The extension of such peering gazes is further strengthened by another opposite hole on the other side of the pavilion [see the first row of images in Figure 7-27]. Beyond that "window" is the next portion of landscape that is associates the *Green Shade* with *Hall of*

Brightness 明瑟楼. Interestingly, by seeing through the two-layered window screens [Figure 7-16], one cannot have a direct view of *Hall of Brightness*. It is because, in the visual effect, *Hall of Brightness* is not allocated in alignment with the vision from the holes of the *Green Shade* pavilion; what stands in the perfect position for such a view is the small connecting landscape which *Hall of Brightness* is closed to [Figure 7-17]. And, moreover, a staircase up to the first floor of the hall is just hidden behind the rocks in this tiny landscape. When standing in the *Green Shade* pavilion, one can only have a few visual traces from such a composition to remind about the possibility of approaching the hall in a certain way.

Figure 7-16 Windows forbids penetrating view to external landscape. A wooden panel formulates the enclosure of *Green Shade*.

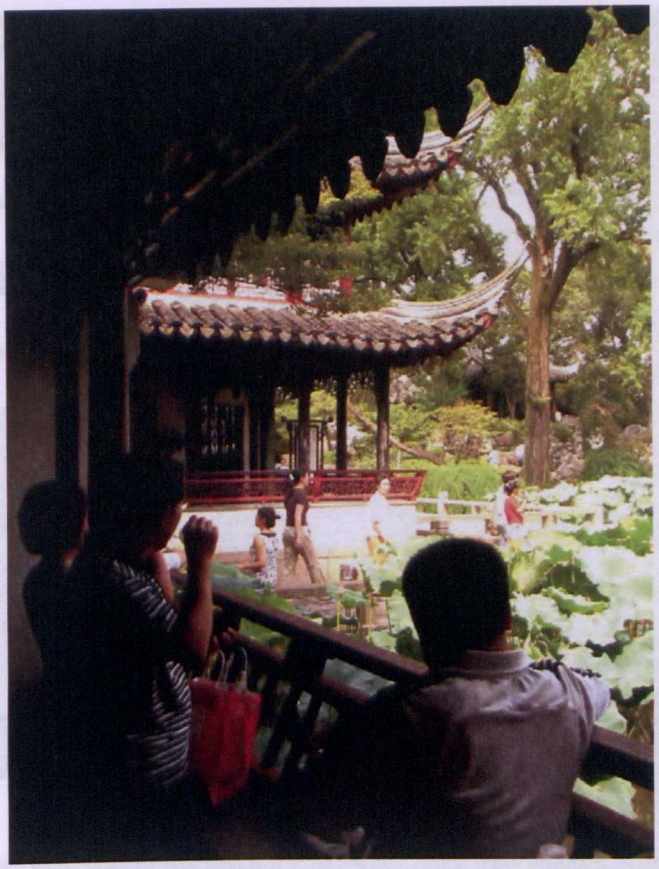


Figure 7-17 From pavilion of *Green Shade* one can see landscape around *Hall of Brightness*, hiding its staircase in the corner.

A second feature is the installation of a decorated screen [Figure 7-18, 19]. It reminds us of a clear intention as that of the painted screen which introduces both spatial division and binary mode of vision. The visual effects on both sides of the screen are further enhanced by the aligned landscape setting [Figure 7-20]. When visitors are about to leave the corridor and enter the pavilion, the visual contrast of light between the dark room and the bright view outside makes the pictorial scene on the screen perfectly overlap the actual landscape behind it. The hollowness of the screen also contributes to the transparency of the image, from which one may have difficulty in differentiating from the scenery borrowed from outside.

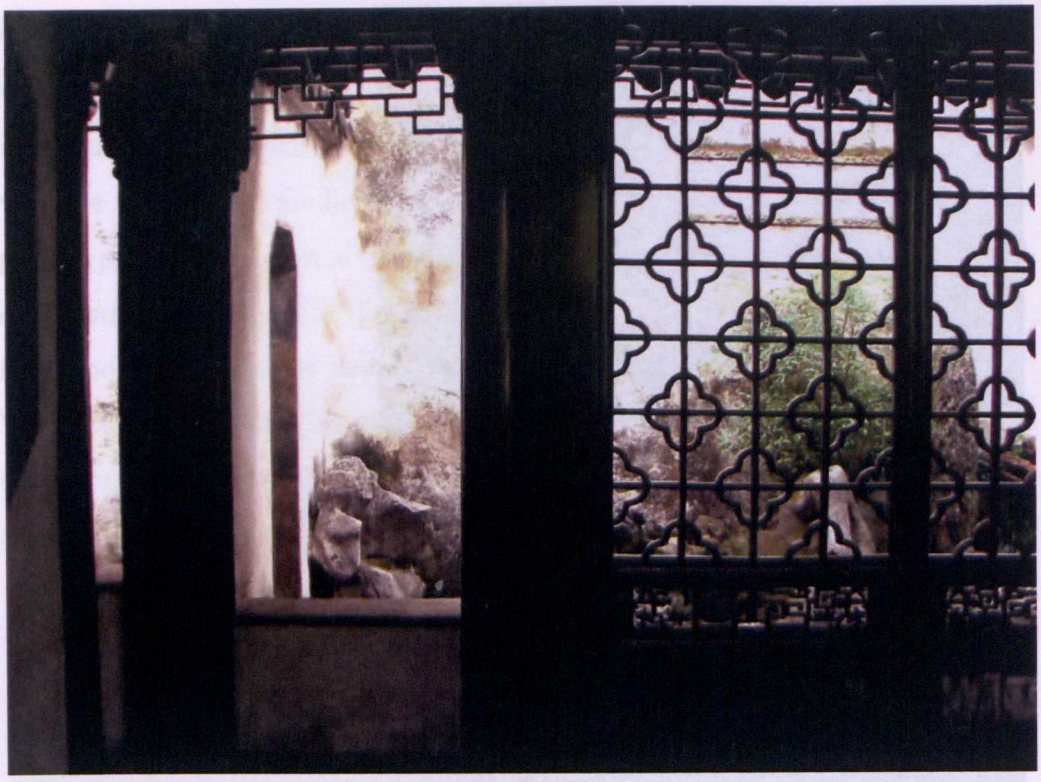


Figure 7-18 Wooden panel dividing *Green Shade* from the outside *Small Dock Architecture*.

Figure 7-19 Wooden panel dividing passage from *Green Shade* and external landscape.

Figure 7-20 Palace scenes with figures, by anonymous court painter, Qing dynasty, Boston Museum.

Again, it is impossible to access *Hall of Brightness* directly from *Green Shade*; but rather, a twisting route has been set up for visitors to turn back to the landscape of *hua bu xiao zhu*, where they would find another gateway right by the corner of the wall blockage [Figure 7-21]. It is here that both the sceneries of the pavilion and landscape temporarily disappear when people enter a relatively small and unnamed house. Suddenly, they have to make another decision to continue the journey [Figure 7-22]. It is possible to go across directly to enter a corridor with landscape on its left side. Or, some of them may still remember the beauty just encountered in *Green Shade*, the lake side and the sophisticated landscape that hides the staircase onto *Hall of Brightness*. Consequently, they may decide to go right into the inner water landscape [Figure 7-23] and unexpectedly find themselves confronting the external façades of both *Green Shade* and *Hall of Brightness* [Figure 7-24]. This time, they may peer back into the window hole where they just now lean

by in the pavilion. The binary vision is thus established and either view can be regarded as part of a series of the beautiful sceneries that are borrowed mutually.

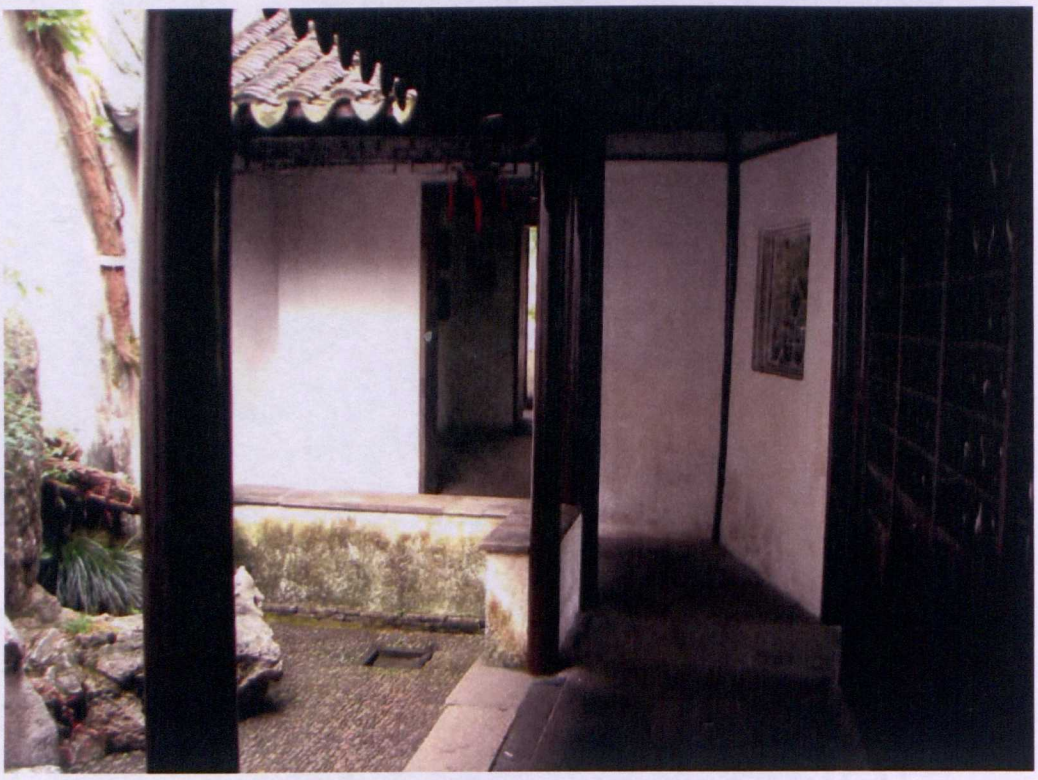


Figure 7-21 Another gateway extending by the side of *Green Shade*, and leading into a dark room.

Figure 7-22 A crossroad in the dark room, either straight forward along the corridor or turn right into external landscape.

Figure 7-23 Turn right and find *Hall of Brightness* and landscape garden.

Figure 7-24 Seen from the outsides of *Hall of Brightness* in adjacent to *Green Shade* by the left.

The first journey of the case study in this thesis ends up right here. From the starting corridor by the side of *Ancient Twisting Trees* to the unnamed transitional house is only roughly thirty metres long. However, as disclosed above, the deployment of architecture, joinery structure and corresponding landscape is extremely delicate. The garden designer is reasonably supposed to have carefully examined the potentials for the transformation of visual effect according to the predominant principles of spatial depth: *twisting and turning* for *borrowing the scenery* and *appropriateness*. Clearly, the treatment is not arbitrary: to place a series of decorated windows along the starting corridor is intended to borrow the external lakeside view; three holes on two partition walls of *Green Shadow* allow a peering and mutual gaze from both sides of the pavilion; the landscape *Ancient Twisting Trees* visually associates and follows the extension of the corridor, while the hidden stone steps as their only physical connection can later be revealed by going across the gateway several metres away. A partition of screen greatly enhances the visual orientation in the *Green Shade* pavilion. It functions just as a painted screen to divide spaces on both sides of it, while its semi-transparency simultaneously connects and extends them into the distant landscape on either side. In the

Green Shade pavilion, the visitors shall be bewildered by the multiple potential visions: to peer through holes on both sides of walls into sophisticated landscape, or face the beautiful lake where the scenes of tiny islands and the lakeside architecture are borrowed again at the command of visitors. A temporary journey ends up at the transitional house; but it does not mean that the perception of visual depth is complete at this phase. On the contrary, it is at this turning point that visitors have the opportunity to select their own favourite visual journeys. Beyond that, this thirty-metre section of architecture can be reviewed again and again from anywhere around the lake in the garden; thus its appearance is constantly changing and never fails to reply to a new answer if it becomes part of borrowed scenery later.

Till now, the study seems rather ordinary in the eyes of modern Chinese scholars on the garden. However, the analysis in this thesis does not follow a routine schedule as that of any precedents. As Stanislaus Fung notices, the method of Chen Congzhou as an association between literature and actual scenery is too poetic and evasive, and what Peng Yigang has done with orthogonal and perspective drawing of architecture seems only a simplified version of scenery in which most of the visual features have been eliminated. On the contrary, the originality of the methodology here, as the main body of the thesis has disclosed, intends to explain the borrowed scenes as the potential visual representation of space, in a way that the sense of spatial depth is delicately transformed. The manner for such visual transformation is of course associated with the taste of garden builders who should have fully appreciated landscape architecture with pictorial ideas. Because of that, both spatial orientation and the associated visual effect must not be taken as random outcomes but purposive results of garden design. On the other hand, visual transformation as such is much more than a simple perspective drawing of architecture; because, as demonstrated by Chapters 1, 2 and 3, it relies on a particular selection of purposive patterns from the pool of visual techniques, such as profile/form, juxtaposition/overlapping, movement, proportion/scale and foreshortening. Instead of orthogonal and perspective techniques, it is highly possible for the designer to integrate other visual techniques in order to present spatial depth in a certain manner. Thus, the case study is obliged to

elaborate such possibilities by transforming actual photos into visual representations of forms in order to clarify the visual traces for spatial depth.

7.3.2 Visual Transformation of "Borrowing the Scenery"

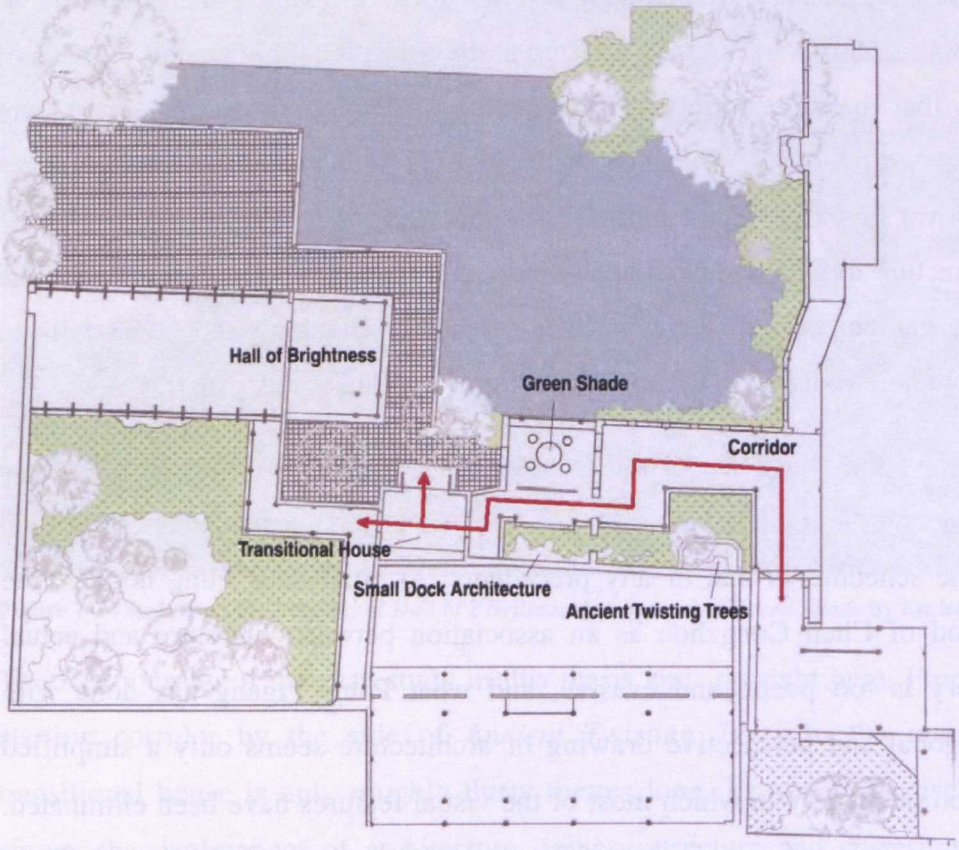


Figure 7-25 Plan around Green Shade Pavilion, drawn by the author.

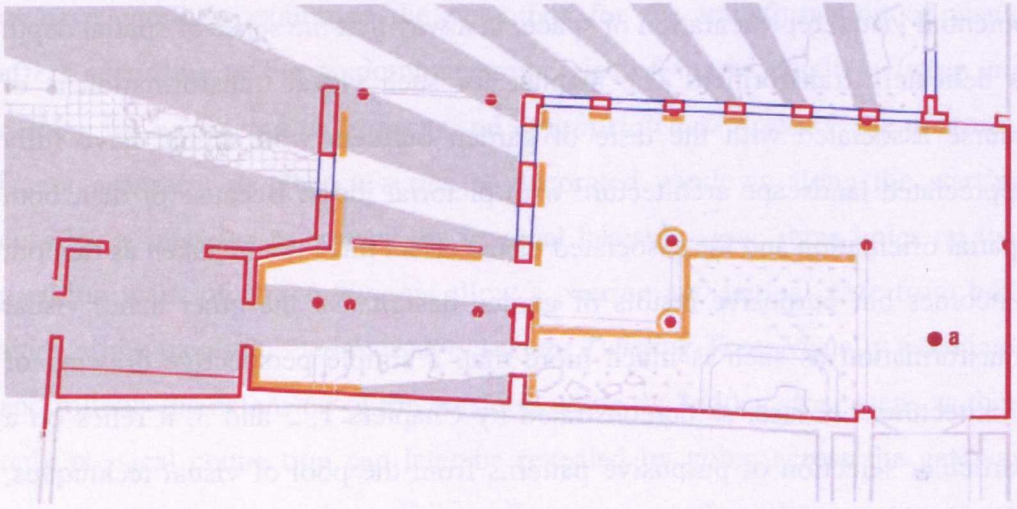


Figure 7-26 Visual Field at Point a, with the covered area shown by grey colour, window with blue line.

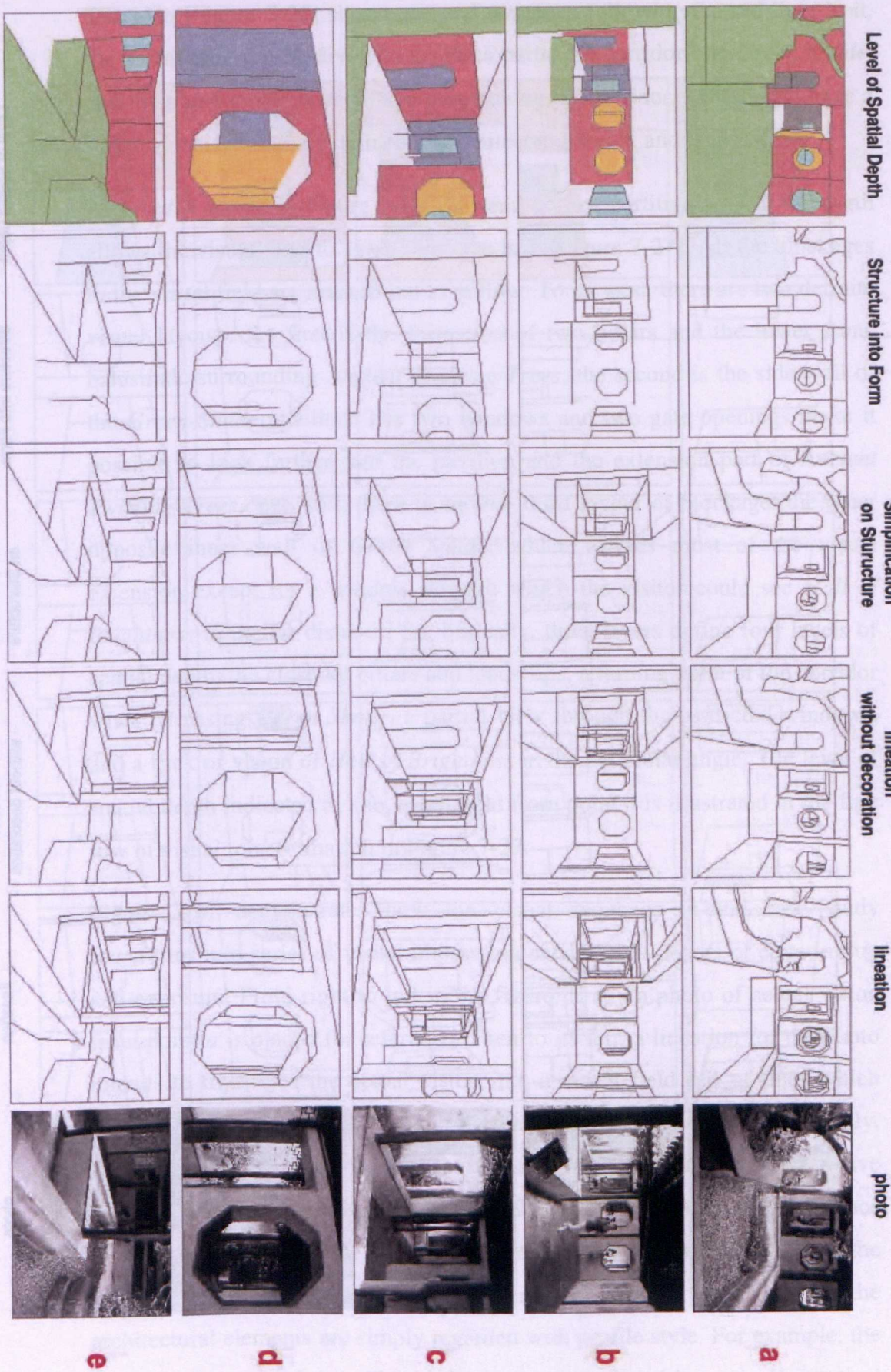


Figure 7-27 Levels of Spatial Depth illustrated by different colours.

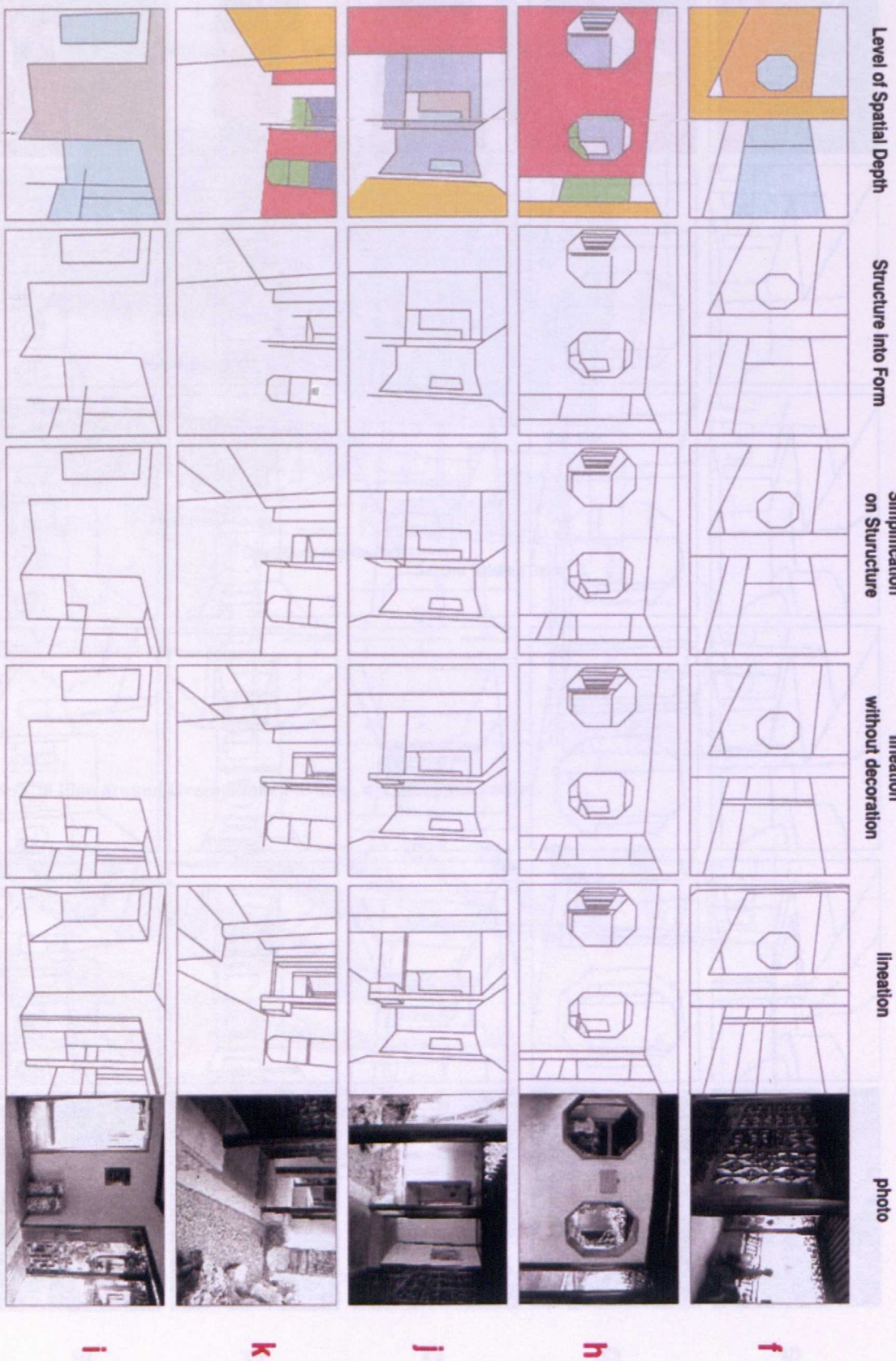


Figure 7-28 Visual Transformation at Green Shade Pavilion.

The plan [Figure 7-25] shows a visual sequence following the red line; in it, the promenade can be divided into three parts: the corridor, the *Green Shade*, and the transitional house. When going along the corridor, visitors can have a series of visions that are defined by architectural layout and landscape.

At *Point a* shown in Figure 7-26, the semi-hollow partition wall to the north allows the visual field to extend into the lake [Figure 7-27]. All the blockages to the visual field are marked out as yellow. To its west, there are two definite visual layouts: the first is the formation of two pillars and the lower stone balustrade surrounding *Ancient Twisting Trees*; the second is the side wall of the *Green Shade* pavilion. The two windows and two gate openings make it possible to look further into the pavilion and the extension part of *Ancient Twisting Trees*. Yet, still, there is another third layout of blockage: the other opposite inner wall of *Green Shade*, which forbids most of the visual extension except for a window through which the visitor could see *Hall of Brightness* in the far distance. So, basically, three layers define four levels of spatial depth: the close-up pillars and landscape, a turning point of the corridor when accessing *Green Shade*, a partial view through the restricted windows, and a flick of vision of *Hall of Brightness* in the particular angle. The level of spatial depth indicated by the visual field from point *a* is illustrated in the first row of visual transformation in Figure 7-27.

Figure 7-27 demonstrates how the visual sequence in the case study transforms into series of visual impression enhanced by layers of covering-up and exposure. From right to left in the figure, firstly a photo of actual vision from point *a* is placed for reference. Then to its left, a lineation for the photo intends to transform the actual vision into a visual field full of lines which suggest the positions of different architectural structures. Successively, another lineation is provided, but those confusing and trivial decorations have been eliminated (texture is also annihilated to exclude the possible interference of texture perspective that Gibson proposes as a cue of spatial depth). In the fourth column, the simplification of images of structures ensures all the architectural elements are simply regarded with profile style. For example, the round appearance of the pillar in the corner is replaced by a simple vertical line; this is because, from a certain distance away, the volume of this pillar can

be ignored if comparing with the vaster occupation of the wall in the visual field. Meanwhile, the thickness of architectural elements like the width of the balustrade is also deleted in favour of a pure profile style.

The fifth column in this diagram provides a further visual transformation in the profiles of elements. This transformation is based on a hypothesis that the fringe of two adjacent objects is not perceptible in the visual field; because it does not provide a clear visual impression for the change of the surface. For example, in perspective drawing, when a balustrade stands up straight on the horizontal floor, the connecting parts of them shows a line to divide their surfaces; contrarily, the transformation in this column denies the existence of such a line, as it intends to show both the balustrade and the floor with an identical surface. The final phase of the visual transformation uses various colours to indicate the setting of multiple spatial depths in the visual field.

In this case, the visual field of point a has at least five levels of spatial depth: the green area stands for the surface of the close-up landscape courtyard of *Ancient Twisting Trees*, which also includes the area of the stone balustrade. The side wall of the *Green Shade* pavilion shown as red formulates the second spatial depth, as one may have four possibilities to peer into the distance. From two gateways, the visitor encounters the grey area which means the enclosure of *Small Dock Architecture* and its landscape garden. Close to it is the yellow partition of a screen and the inner wall of *Green Shade*, which provide a sense of middle distance that juxtaposes the red and grey distances. Finally, several light blue areas indicate that, from point a, it is possible to see the far-distance scenery which is probably part of *Hall of Brightness*. Interestingly, due to the concentric alignment of two windows, a penetrating view could go through the multiple blockages of *Green Shade* into the far scenery shown as light blue.

When processing forward to point b, the non-aligned windows forbid the penetrating view; thus, the visual field from this view angle loses one level of spatial depth. Yet it still maintains four of them. Green-coloured foreground shows pillars and balustrade of the passage. Red partition wall forms the second blockage for the Green Shade. Yellowed interior of the pavilion is the

third spatial depth, while leaving space behind it and far away encloses as the fourth depth.

At Point c, *Hall of Brightness* is again available in the visual field through the penetration of the double windows. Thus, a sense of spatial extension changes constantly. Other spatial depths keep unchanged from those of Point b, allowing a smooth change in scanning decorative details and hidden corners of the structures. Now when at Point d, *Hall of Brightness* disappears once again, even with the passage. What we can see through is only the wooden panel in yellow that divides the *Green Shade* from *Small Dock Architecture*. Point e is actually an overview back to the entrance where only two spatial depths exist. There are only a red enclosure of wall and a green surface of garden. External landscape can only be partly appreciated through series of windows on the left-side corridor.

In the same manner, the transformation at point d indicates the composition of the side wall of *Green Shade* and its hollowed screen through which one may peer into the landscape of *Small Dock Architecture*. From point e, which is viewed back through the gateway, it is intended to demonstrate the phenomenon that the landscape extends along the corridor; meanwhile the balustrade close up and the back wall at the entrance formulate levels of spatial depth in such a mutual visual field at the front and back of the gateway.

Point f is of particular interest in the decorated screen, which separates the pavilion from the outside corridor. It has a similar function as the painted screen placed in the middle of the space to provide certain psychological security by means of its physical mass. The hollowness of this screen meanwhile allows possible visual penetration into the lakeside scenery of *Hall of Brightness* in the distance. Consequently, in the diagram of the transformation of point f, the screen is illustrated as a giant rectangular "hole," rather than as a blockage. When people lean by the balustrade over the water, they shall find themselves juxtaposed between the scenery borrowed from the outside and the peering view through the decorated screen into the landscape of *Small Dock Architecture*. In the meantime, the imagery woodcut on the screen can be taken as either part of the lakeside view or attached to the wall

blockage against *Small Dock Architecture*, depending on the position of the beholder. This is exactly a case of penetrating gaze of screen painting. Point f turns out to be the most complicated place that denies clear definition. It is actually a most frequent manner, not restricted in the scholar-elite style of the Chinese garden but popularized over all kinds of it. A status of "divided" or "undivided," "concealed" or "unconcealed" is truly in need of philosophical attitude and anthropologist spirit to answer.

Visual fields at *Green Shade* are shown in Figure 7-28 as Points h, j and k. Point h is also a turning-back visual field toward the entrance just as Point e. A minor difference relies on the layer of spatial depth that develops with the help of the partition wall of Green Shade. It provides additional depth and makes the entrance constantly showing off and blacked out according to the changing angles of its two penetrating windows. It also brings intriguing positions from where the *Ancient Twisting Trees* has only a partial appearance of its trees, not the garden area on the ground. When clues of the extending lines of the ground and pavements disappear, what people see through the windows shall be of no difference from a Cezanne's watercolour painting in which spatial depth means little. Windows ensure the cancellation of spatial depth to certain extent that *Ancient Twisting Trees* becomes a mere image of space that keeps refusing to be touched.

Point j locates by the side of the wooden panel of *Green Shade*. From the visual frame of Point j, one can only see an overwhelming sense of enclosure by the panel and the walls of the dark room in the front. Sense of spatial depth is sharply damaged; the only chance for an extending view to the far ground is reluctant to be found through the double doorways of the dark room. Visitors have no excuse to go inside of it if only according to visual impress of space. However as in the meantime it is the only way to excess interior space, they have no choice but keep wandering. When they accomplish this process, the crossroad in the dark room shown at Point i will lead visitors into the beauty of *Hall of Brightness* and interior landscape.

Point k is also a back view to where visitors have already passed by. It shows a few stone steps as the hidden connection between the co-extending corridor

and the landscape. After entering from the left gateway, visitors go down along the steps into the landscape of *Small Dock Architecture*, and continue the journey back into the right gateway. Then, they finally reach the encircled courtyard of *Ancient Twisting Trees* where they have encountered in the beginning of this visual experience of the *Lingering Garden.* It is basically a game of labyrinth with two juxtaposing doorways, one for the passage and the other for the inner garden. When standing at Point k, visitors may have slipped from a spark of memory that through which doorway they come. The two visual fields of them are the same in the nature of four spatial depths. A helpful factor to make a decision to discover is the identical pavements of both *Small Dock Architecture* and *Ancient Twisting Trees* far beyond the gate. Yet it is a charging feature of texture, not of spatial depth.

It is from point i in the transitional house that people have to make a decision whether to go straight into another corridor which has a new intriguing courtyard of landscape at the end of it, or pick *Hall of Brightness*, which has already come into the part of the visual field of point i, as their temporary destination in the garden. If so, they will discover the hidden staircase up to the first floor around the turning point under the porch. The journey continues later by the side of *Hall of Brightness* and the lake side to the western forest of *Lingering Garden.*

To sum up the architecture at the entrance of the *Lingering Garden*, it has several features of the visual experience:

1. Bodies of architecture provide intriguing phenomena of the extension of spatial depth through windows and partition walls.
2. Landscape works sometimes as mediating zones in a garden for the transition of space, or as a backdrop veil to form a farthest spatial depth.
3. The two gardens of *Ancient Twisting Trees* and *Small Dock Architecture* partially connect and partially detach from each other, according to the points of view from where people see through bodies of architecture. The feature of these gardens that landscape extends

along architecture is also of a formal sense that is different from a corridor which can totally hide its physical body in the landscape.

4. When visual process goes on, spatial depth keeps constantly changing according to the allowance of bodies of architecture. Meanwhile, each spatial depth has always an identifiable scheme for what it discloses, a miniature of twisting trees, a fanned decorative panel, a dominance of a great hall, or a final exposure of landscape.
5. Passages of architecture meander to present a sense of wandering as well as the changing spatial depths. The appropriateness of the bodies is highly intentional.
6. To borrow scenery from outside means to create a new extension of spatial depth; on the contrary, to conceal part of the scenery is a way to compress its spatial depth and transform architectural space into a two-dimensional image that enhances the actual environment by a piece of representation of it.

It is therefore a fundamental feature of C-P as shown here that spatial depth can be manipulated in favour of the visual experience of people. Spatial depth is squeezed when disfavoured, intensified in achieving the sense of meander. Windows and partition walls endow C-P with full range of capacity to appropriate the body of architecture and borrow the favoured scenery from outside. With this capacity Point a must be deliberately examined to provide such a visual field of multiple spatial depths. Visual fields for other station points around the part of the corridor like b, c, d and e are also demonstrated in the same way. They all have an identical manner in the treatment of architectural deployment according to the needs of the concealment and disclosure of spatial depths.

Whether the Chinese scholar-elite landscape garden could provide with readers sufficient phenomena of visual impression like this, it is a firm intention of this thesis to examine the possibility to take an actual space of architecture and landscape as an iconological subject of visual representation, and to originate its functions to fundamental requirements of psychology of vision. The case study of the *Lingering Garden* has already made a starting point for the study and clarified a promising future. It confirms possibilities

that Chinese ancient architects may, on one hand, emphasize aesthetical features of the built environment, and on the other hand, manipulate architectural space in the manners by which an actual space could possibly be seen according to the human eyes, and how this view could be transformed into reliable pieces of visual representation.

Summary

The visual transformation of the Chinese landscape garden into representational visual fields is intended to indicate a constant change of spatial depth. The possibility of such a mechanism of visual analysis has to be examined firstly by the historical context of Chinese landscape garden design. Through the literature review, it is believed that the ancient pictorial principles did not influence garden design until the late Ming when garden makers showed a clearer inclination to learn from representational art. This transition is parallel to the more intensive involvement of architecture in the landscape garden, from an additional role to the dominant figure in making various senses of spatial depth. The only survival of the Chinese garden treatise, *The Craft of Gardens*, elaborates in detail about how to make use of architecture in favour of spatial depth with two features: the *appropriateness of body* and *borrowing the scenery*. To incorporate both ideas, garden builders of the late Ming create a *twisting and turning* style of architecture, which is mainly dependent on *joinery architecture* like furniture, structure of corridor and decorated screen. Since then, pictorial ideas have had their rebirth in architecture which greatly contributes to the spatial compartmentalisation, correlation, communication, and infiltration. All of these provide the Chinese landscape garden from the late Ming with the superfluous potentials for the visual representation of spatial depth.

Lingering Garden as sample of late Ming Dynasty thus meets the requirement for the case study. The entrance part of this garden is selected for its

complicated spatial layout between landscape and architectural structures. It prefers to transform a series of actual photos into images of visual transformation in which various levels of spatial depth are illustrated. It also intends to show that the Chinese landscape garden has purposive patterns for architectural composition, in which spatial depth may hypothetically play an indispensible role in visual effect. In this way, garden designers integrate pictorial ideas into the landscape garden, the result of which cradles a particular visual culture of *Cavalier Perspective* that has been broadly accepted among the worldwide scholarship.

Conclusion

The psychology of the Chinese visual culture of space is believed to be a cultural subject, too elusive and poetic to accord with the idea of the construction of architecture that is based on the perceptual experience of vision and touch. To claim *Cavalier Perspective* (CP) has an analogical linkage with a pictorial creation of imaginative space would deny its origins which, from the very beginning of its purpose, are inclined to resemble a psychological perception of spatial depth. The hindrance that abominates a formal understanding towards the spatial creation of CP appears to be a separation between its artistic purposes and what is to be represented with, and that is usually in the name of architecture and landscape. This separation is not a traditional one, but rather a modern thinking. The transition in such thinking thus echoes what Joseph Rykwert (2008: 374) describes about the role of architecture and the study on its history, as "Architecture has therefore been gradually separated from such activities as we consider more or less 'cultural', particularly from those other arts once classified as visual and which have had to rely increasingly on a conceptual rather than a perceptual experience." At the risk of sounding nostalgic, Rykwert is actually venturing to restore architectural representation of space back as a topic of visual culture. Although such a development is highly dependent on political and social factors which disfavour a formal analysis on visual forms representative of pictorial depth, one cannot deny the creation of indicative visual patterns as *Cavalier Perspective* is supposed to have never been accomplished unless the collaboration between an iconological study and psychology of visual perception is thoroughly invited and implemented in the proposed formal observation upon pertinent visual evidences.

In such an observation, it demands the capability to notice two credentials for the iconology of visual perception: to transform a visual impression of space into purposive patterns of form; and to organise these patterns according to particular visual techniques in order to indicate specific visual schemes. These two credentials are of importance because they may help define the feature

and role of *Cavalier Perspective* in presenting spatial depth in Chinese pictorial space.

What Rykwert talks about regarding the perceptual experience actually gives an essential basis for the present study to choose the method of visual psychology in order to re-define the perception of the representational space. In fact, to transform a real object into an image of form is not a coincidence but a prerequisite of visual perception. The validity of any selected visual techniques is firmly based on and resembling the physiological function of human eyes. In so doing, artists find depth cues effective to provide the sense that is able to compensate for the loss of spatial depth from real object to imagery form. From size/shape, juxtaposition/overlapping, movement, to scale/ proportion, foreshortening, perspective and projection, they all indicate an identical purpose in the way they organise the patterns of form to present spatial depth.

The discovery of these visual techniques, the seven 'pillars' in the western art, discloses an identical soil, which Chinese ancient artists may have used to imitate the reality in the same way as they have driven the supposed observers to see and understand their creations. In other words, on both levels of form and visual technique, there is no distinction between the east and west. This theoretical intention contrasts heavily with others in acknowledging that *Cavalier Perspective* in Chinese visual culture may be not, judging by what techniques it has facilitated, so distinctive a visual mechanism as it is supposed to be. The finished expedition through Chinese visual art from pre-historical times to the 17^{th} century has demonstrated a vicissitude in using either technique in aim of realistic representation of space of architecture and landscape. In the balance between them, no overarching visual system has been established to render a consistent spatial depth in the picture. The application of a certain visual technique to concord with a customary visual requirement becomes rather a paradigm of visual laws for later artists to follow. This situation does not even change in the ruled architectural drawing of the Sung Dynasty which favours a highly constructible visualisation of architectural space according to the reasonable usage of several techniques correlatively. One can see that the sense of spatial depth for each purposive

pattern of form is an 'indication' by its nature as an object should occupy a certain level of distance. Those who think such representation as trustful would find themselves betrayed by noticing the failure in presenting consistency between architecture and surrounding landscape. In other words, the body of architecture as a single pictorial form is isolated from others; and such isolation denounces the possibility that Chinese ancient artists have found a way to construct pictorial space consistently foreshortened as the western perspective will do. *Cavalier Perspective* is thus not an 'illusory' of space, but rather an 'indication' of space with a realistic representational purpose.

The construction of representational space in Chinese landscape painting also confirms a similar feature like that. The progress, from the discernment of divergence of direction, space-cell to the upgraded diagonal placement of forms of landscape in a zigzag formation, stops to be naturalistic when Sung artists begin to abandon the idea of 'formal likeness'. The development of formal organisation, however, continues through the Yuan and Ming Dynasties, when painters like Chao Meng-fu and Huang Kung-wang improve or reinterpret ancient predecessors in their brushes to make a variety of zigzag formations available and representational. One can notice that, although more and more symbolic and self-referential meanings are involved later, the formation of spatial depth has still relied on the patterns of form of mountain and riverbank for quite a while, as a large amount of evidence can be found in manuscripts of painting theory. The diagrams of two distinctive 'three-distances' of Kuo Hsi and Huang Kung-wang have shown that the spatial depths they have individually urged to deploy are neither precarious nor subjective, but highly constructible. It is utterly true until Tung Chi-chang claims the 'great synthesis', which deliberately treats space by the formless power of image in order to suppress spatial depth. Consequently, we have enough reason to believe that spatial depth as a representational topic in Chinese visual art must be the uttermost goal to achieve and compensate when using any available visual techniques to organise the visual forms. At least on this level, *Cavalier Perspective* is nothing of symbolism and poetics, but still of a mechanism to make purposive patterns of form in a zigzag yet sometimes inconsistent formation to indicate spatial recession into the distance.

After the study on specific evidences, one can find that neither form nor visual schemes has provided us with a warm chance to differentiate *Cavalier Perspective* as an exceptional mechanism. So we have to refer back to a supposed overarching system that may possibly not exist. This system should not be consistent in all of its constituents, but chances will be given if, as Chinese ancient artists may choose whatever fits temporary requirements of achieving spatial depth while disregarding whether it accords with others, it can be translated as a multi-fold visual mechanism as a conglomerate of less integrity. On the level of geometry, we can also notice that it is difficult to define it either as *Affine* geometry or *Projective* geometry, due to the fact that the visual techniques it has used in various situations belong to different geometrical systems. However, as normally believed, the features of parallelism and optical infinity of the *Affine* system in most Chinese visual art do introduce an insight which also repeats what *Cavalier Perspective* is believed to have: the placement of multiple station points. It is actually about a visual manoeuvre of the human body to cope with such a changeable visualisation.

However, such a deployment of station points does not like what Arnheim inclines to draw in his visual analysis on Chinese visual art as an accidental movement of perception according to human eyes. It is about the location and thus dislocation of the human body in relevance to the representation; and, even further, such an integrated visual system has become in itself a subject ready to represent. Only in this sense, spatial depth does really matter. A station point is consequently transferred as an indicator of visual direction, not of visual point. And such a visual direction may be indicated by either the movement of the image, or that of the human body itself. Both remind us of a rather primitive installation of mirror in presenting visual illusion of distance.

And it is truly a tradition for both east and west to establish such a visual impression to enhance the perceptual visual depth in image. Mirror does not rely on the complicated calculation of the diminution of the apparent sizes of forms, which is the basis of depth cue in the psychology of visual perception; but, on the contrary, it strengthens the simple relationship between the positions of image and human body into a far more sophisticated phenomenon.

Chinese Buddhist representational art exemplifies such a utilisation of mirror to create the visual illusory of space to dislocate both image and body. In ordinary life, the mirrored effect is also quite often attached to screen painting, and the installation of painted screen in the domestic environment. Among many featured evidences, the paintings that show a 'double-screen' system are able to testify the enhancement of the sense of spatial depth by multiplying the visual directions back and forth. In this restricted sense, we can identify the Chinese visual representation of spatial depth as a 'visual scheme' is not a result of physiological association as that of western visual psychology, but that of a cultural phenomenon to select and juxtapose a series of images, instead of an overarching visual system. Chinese ancient artists thus never fail to discover the possibilities of using the juxtaposition of images; they are only arduously finding more alternatives to organise these forms in favour of indicating purposive patterns that never disclaim improvement.

It is thus believed that an actual architectural space with pictorial ideas should be built according to the identical mechanism, as we are always inclined to target the Chinese scholar-elite garden as a plausibly appropriate sample for that. However, the validity of form and visual technique in perceiving the actual space is unfounded, not only due to the difficulty of transforming a real object into a vision of image, but also because it brings into inspection that such pictorial ideas may never exist in a garden. Available scholarship has demonstrated that the borrowing of pictorial ideas for the garden only started from the late Ming periods when the idea of 'formal likeness' was entirely dismissed. Accordingly, one may raise an emergent inquiry that an architectural enclosure of symbolic and formless meanings may not be interested in *Cavalier Perspective* at all. For those who embrace the idea that CP stands for an artistic creation of space without the constructional meaning, everything within pictorial space would only be associated according to its symbolic meaning, while losing its implemental origin as an indicator of space.

However, the present study questions the seemingly ultimate symbolism and gives an alternative answer for that, as spatial representation of *Cavalier Perspective* must be forged upon an architectural thinking of visual and tactile

conformity. It is because, in nature, architecture and landscape should have patterns of form as long as they have physical existence to present a sense of space. It is nothing like poetic imagination, and thus attaches great importance on how they can reflect the integrated senses of the human body, acquired by visual and tangible organs. This integrity could not allow over-exaggeration of the poetic and symbolic meaning over its architectural structures. Details also show that there is a split between the purposes of landscape and architecture in the garden, as the former is self-referential and the latter representational. The large amount of installations of the painted screens and corridors in the name of *joinery work* have been a consistent evidence for the fact the manipulation of spatial depth in a limited space has been not suppressed but magnified, in order to fulfil the same purpose of Chinese ancient visual art which prefers a zigzag deployment to appropriate its visual field during the visual movement of the observers. Thus, the visual field become representational. To create such a representation, the garden makers incorporate the *appropriateness of body* and *borrowing the scenery* in a *twisting and turning* style of architecture. The consequence of these features is a marvellous show-off of spatial depth according to the spatial compartmentalisation, correlation, communication and infiltration. During this process, the architectural structures and surrounding landscape have been successfully transformed into the similar purposive patterns as those in visual arts which bring both excitement and confusion in acknowledging *Cavalier Perspective* as a hypothesis of visual mechanism in the perception of spatial depth.

In sum, the psychology of the Chinese visual culture of space must be understood as a procedure of 'translation' that we would encounter during the integrated perception of actual body and space as well as the transition from it into the represented pictorial space. This kind of representational space is of consequence to the visual translation when bodies of architecture and landscape can be replaced by a series of visual phenomena which become purposive patterns of form. They are available for further re-organisation according to selected visual techniques in order to compensate spatial depth. In other words, CP is a visual scheme of the pictorial idea of depth. It is served by several visual techniques, but none of them can be expected to conclude the

totality of CP's functions. CP has also a cultural meaning, yet it must be established on the basis of the formal 'translation' aforementioned. Furthermore, it is necessary to secure a preliminary knowledge of CP as an essential factor before the creation of a Chinese landscape garden. The systematic application of a pictorial idea into a garden results from a rebirth of it during the arduous learning of people who had begun architectural work and painting at the same time since the late Ming. Consequently, what CP has been acknowledged as by contemporary scholars should be a revised script of the representation of pictorial space of that time. The representational space till Ming is completely nothing of a pure symbolic creation, but rather a deliberation of form to compensate spatial depth.

The chronicled emergence and separation between the architectural space and the representational art through this writing is intended to tell readers to be aware of the broken friendship which has long resulted in our suffering in defining what an ingenious Chinese visual system should truly be. The remediation is made as soon as such an unfortunate divorce is identified and marriage reunited. The study of architecture in terms of visual culture has been excluded from the spotlight of the mainstream, when emergent knowledge of politics and economics get full attention. A reclaiming of visual art to originate architecture as a pure image may be thought of as a rather outdated methodology; however, when people embrace this idea and claim others as the basis of a cultural study on architecture, they may fail to notice that the linkage between architecture and visual arts has long been established in history and thus become a firm part of culture itself. Architecture must always sense a response from visual images which never betrays a cultural point of view.

This cultural point of view actually forms a basis for my primordial study of this topic. The focus does not exclude the points of view from the literature review on historical manuscripts which enhance the overview of how traditional Chinese scholar elites like Liu Zung-Yuan 柳宗元 reflect spatial thinking in their poetries and prose. The work that Gu Kai 顾凯 has already

dedicated in *Si Ku Quan Shu* 四库全书[120] is a superior start, yet far from being complete. The development of Chinese visual culture of space cannot be identified in detail unless ancient manuscripts of it has been gone through and associated with any available source of traditional painting of any kind that belongs to the representational art. Thus a large amount of the checks on the cultural background appeared to me more critical than later contents which finally turned out to be indispensible. The omission of these cultural senses is due to the limited time of a PhD study, not because of less importance. It is surely a pity for now, however, but it gratefully provides a definite future of an intensive study.

Meanwhile, as this present work inclines to make, the proposal is to identify a visual culture as a particular formal analysis that attaches on the availability of visual techniques to transform visual phenomena into purposive patterns of visual form. In most of the time, the application of certain visual techniques is the result of the discovery of a visual law that appeals to a new visual implement, just like that of perspective when Brunelleschi facilitated the mirrored reflection of the Florence Baptistery to imply the scaled foreshortening of visual lines towards the giant gate. So why did Chinese ancient artists manufacture *Jie Chi* 界尺 to draw the painting of *Jie Hua*? Is it a simple question of the selection of artistic creation or an evolution of medieval science, like how the study of vision makes progress from the time of Aristotle, to Ptolemy from whom ecclesiastic preachers learned to construct Gothic cathedrals by means of projective images, and finally becomes a heritage of Renaissance painters? The questions of technique are far from being concluded and worthy of following scholarship to seriously confront.

To set architecture and representational space at the centre of my iconological study on visual perception thus denies a metaphoric image which resembles reality yet makes an aesthetic promise. A photograph of architecture may be a work of art, but the building itself does not secure as one. As I try to

[120] Siku Quanshu, *Imperial Collection of Four*, is the largest collection of books in Chinese history. The compilation started from 1773, and finished nine years after. Inclusive of antique books from the Qin to the Qing Dynasties, it has more than 36,000 volumes, 800 million words. Thus it provides a comparably complete resource for the study of Chinese ancient culture.

investigate the perception of spatial depth in the scholar-elite garden as a representational art, what I am intending to explain is a potential way to avoid the corruption of architecture as a simple messenger of arbitrary ideas of symbolism and doubtful aesthetics. If, in conclusion, I could return to the preliminary concern that leads my scholarly detection on the psychology of Chinese visual representation of space, it is because I know that architecture is built, unpredictably or not, to appeal to the fundamental requirements of the human body, just like Le Corbusier (1954: 72) has identified in *The Modulor*, that "Architecture is judged by eyes that see, by the head that turns, by the legs that walk." Maybe nothing else.

Appendix 1

CHRONOLOGICAL TABLE OF DYNASTIES

XIA 夏	c. 2000 – c. 1650 B. C.
SHANG 商	c. 1650 – c. 1050
ZHOU 周	c. 1050 – 256
QIN 秦	221 – 207
HAN 汉	201 B. C. – A. D. 220
THREE KINGDOMS 三国	221 – 265
SOUTHERN and NORTHERN DYNASTIES 南北朝	265 – 581
SUI 隋	581 – 618
TANG 唐	618 – 906
FIVE DYNASTIES 五代	907 – 960
SUNG 宋	960 – 1279
YUAN (Mongols) 元	1260 – 1368
MING 明	1368 – 1644
QING (Manchus) 清	1644 – 1912
REPUBLIC 中华民国	1912 – 1949
PEOPLE'S REPUBLIC 中华人民共和国	1949 –

Appendix 2:

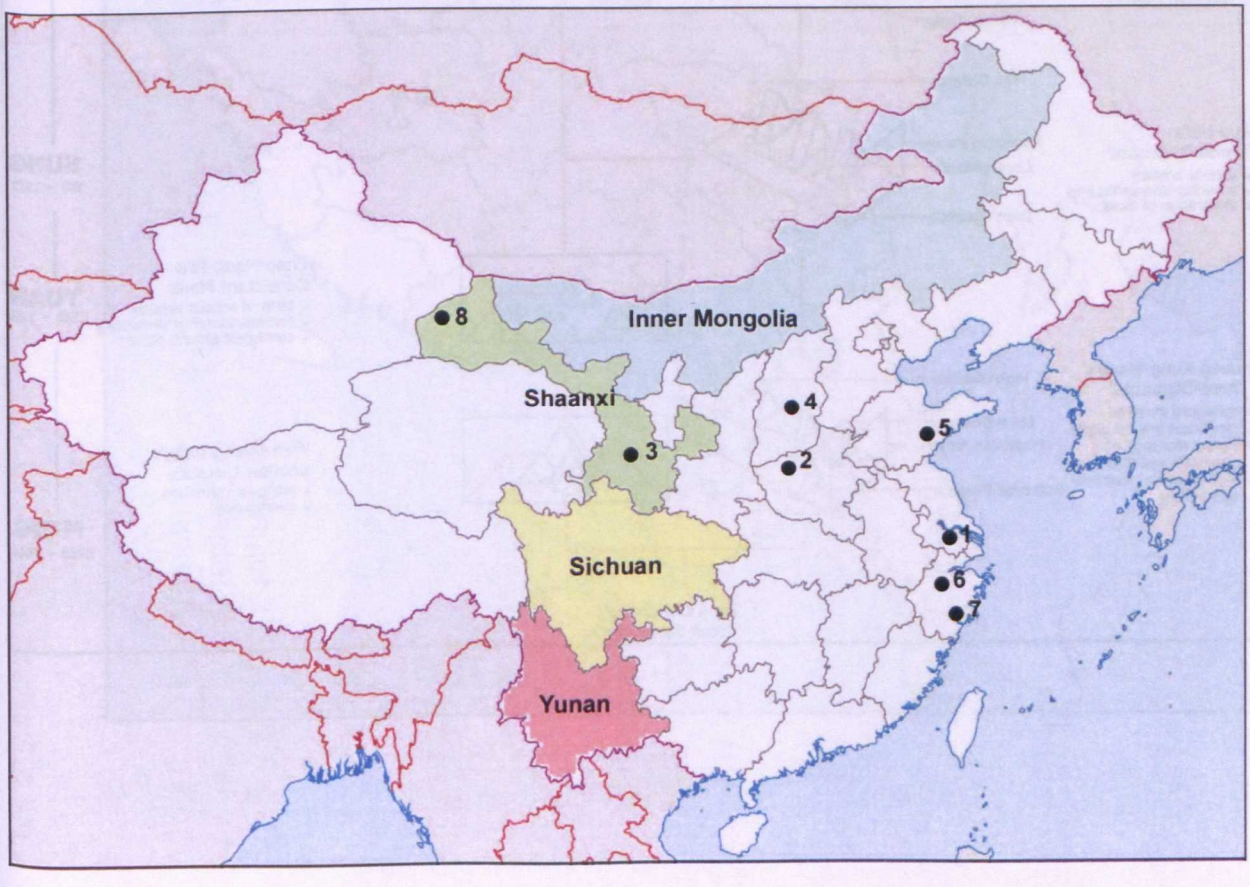
Synopsis of the Key Developmental Stages of the Early Chinese Representational Art, with Key Contributors and Their Geographical Locations:

*a. **Secular Representation down to the Tang Dynasty (c.2000 – 10th A.D.)***
Medium: Engravings, carving stones, painted stones.
Main Location: Yunnan , Sichuan , Shaanxi , Inner Mongolia.

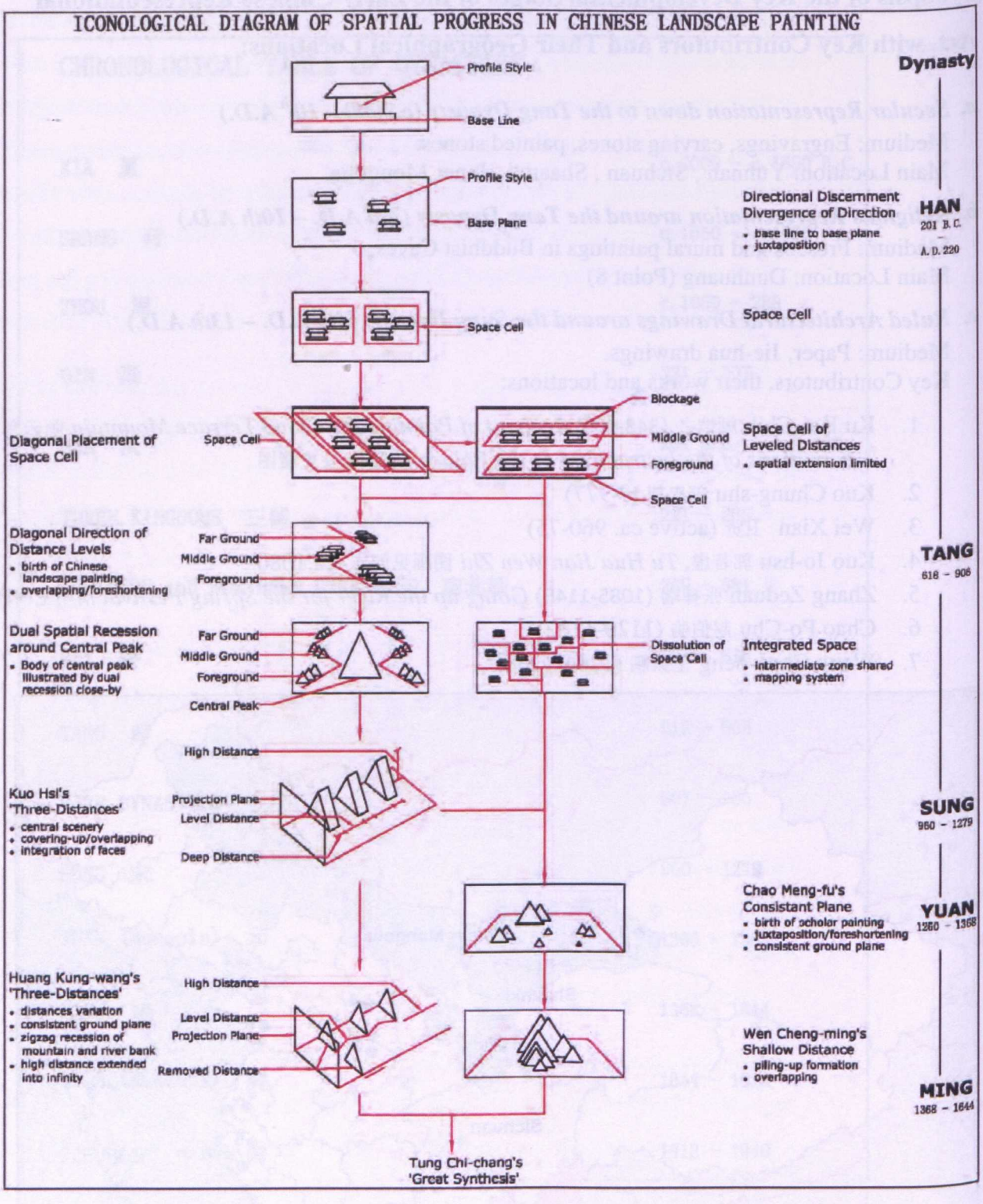
*b. **Religious Representation around the Tang Dynasty (3rd A.D. – 10th A.D.)***
Medium: Frescos and mural paintings in Buddhist Caves.
Main Location: Dunhuang (Point 8)

*c. **Ruled Architectural Drawings around the Sung Dynasty (4th A.D. – 13th A.D.)***
Medium: Paper, Jie-hua drawings.
Key Contributors, their works and locations:

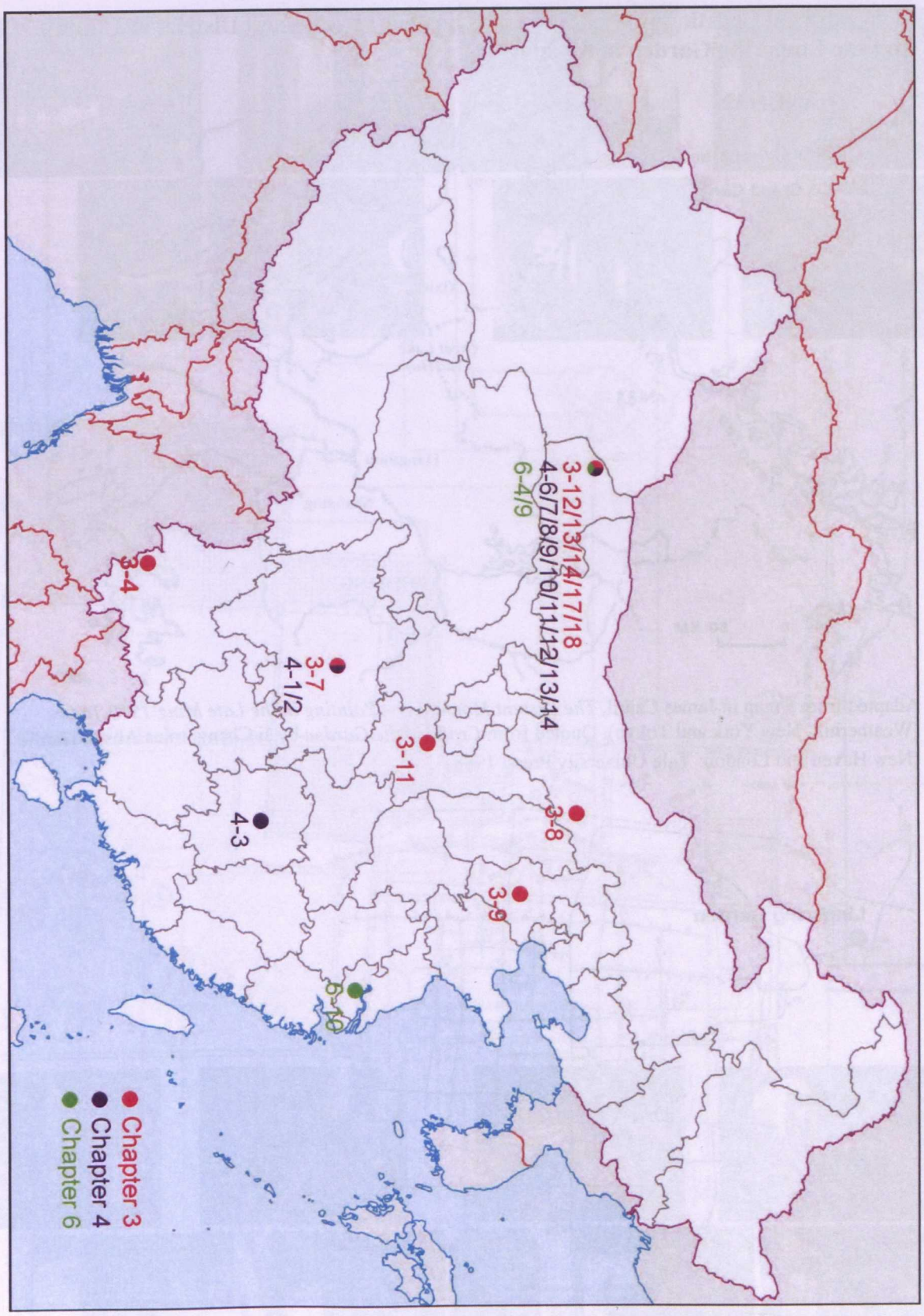
1. Ku Kai-Chih 顾恺之 (348-409) *Account of Painting the Cloud Terrace Mountain* 画云台山记; *Admonitions of the Instructress to the Palace Ladies* 女史箴图
2. Kuo Chung-shu 郭忠恕 (?-977)
3. Wei Xian 卫贤 (active ca. 960-75)
4. Kuo Jo-hsu 郭若虚, *Tu Hua Jian Wen Zhi* 图画见闻志 ca.1080
5. Zhang Zeduan 张择端 (1085-1145) *Going up the River for the Spring Festival* 清明上河图
6. Chao Po-Chu 赵伯驹 (1120-1182)
7. Wang Chen-peng 王振鹏 (1206-1268)



Appendix 3:

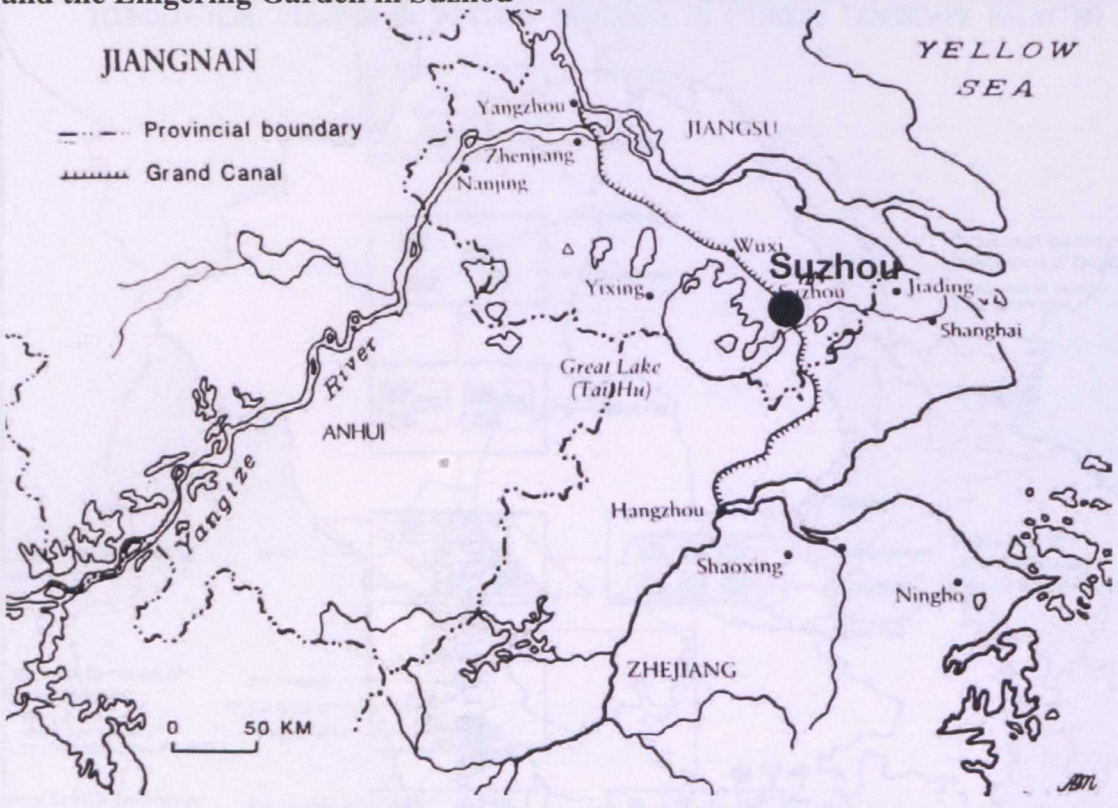

ICONOLOGICAL DIAGRAM OF SPATIAL PROGRESS IN CHINESE LANDSCAPE PAINTING
Dynasty
Profile Style
Base Line
Profile Style
Base Plane
Directional Discernment
Divergence of Direction
• base line to base plane
• juxtaposition
HAN
201 B.C. – A.D. 220
Space Cell
Space Cell
Blockage
Middle Ground
Foreground
Space Cell
Diagonal Placement of Space Cell
Space Cell
Space Cell of Leveled Distances
• spatial extension limited
Diagonal Direction of Distance Levels
• birth of Chinese landscape painting
• overlapping/foreshortening
Far Ground
Middle Ground
Foreground
TANG
618 – 906
Dual Spatial Recession around Central Peak
• Body of central peak illustrated by dual recession close-by
Far Ground
Middle Ground
Foreground
Central Peak
Dissolution of Space Cell
Integrated Space
• intermediate zone shared
• mapping system
High Distance
Kuo Hsi's 'Three-Distances'
• central scenery
• covering-up/overlapping
• integration of faces
Projection Plane
Level Distance
Deep Distance
SUNG
960 – 1279
Chao Meng-fu's Consistant Plane
• birth of scholar painting
• juxtaposition/foreshortening
• consistent ground plane
YUAN
1260 – 1368
Huang Kung-wang's 'Three-Distances'
• distances variation
• consistent ground plane
• zigzag recession of mountain and river bank
• high distance extended into infinity
High Distance
Level Distance
Projection Plane
Removed Distance
Wen Cheng-ming's Shallow Distance
• piling-up formation
• overlapping
MING
1368 – 1644
Tung Chi-chang's 'Great Synthesis'

Appendix 4: Geographical Relations of the Selected Stones Figures Referred in Chapters.

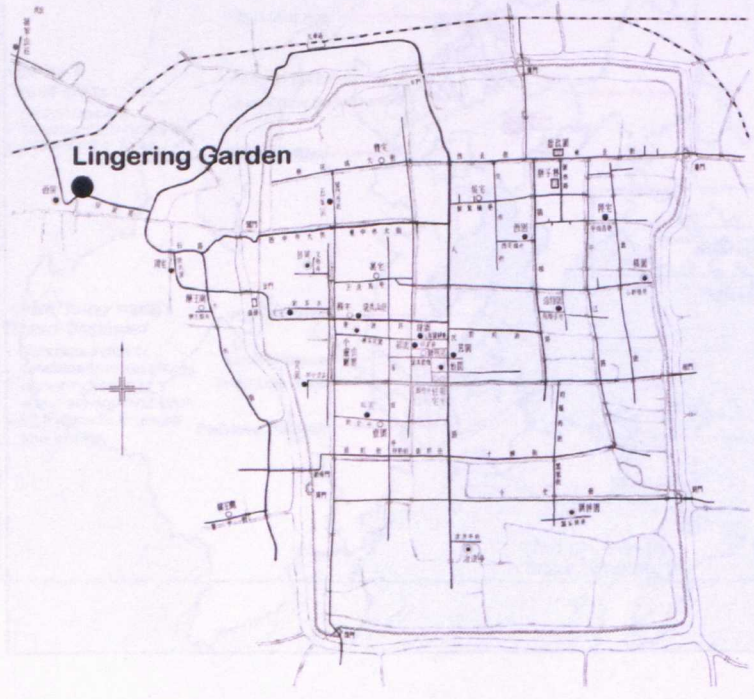


Appendix 5:

Geographical Locations of Scholar-elite Gardens in Jiangnan District of China and the Lingering Garden in Suzhou

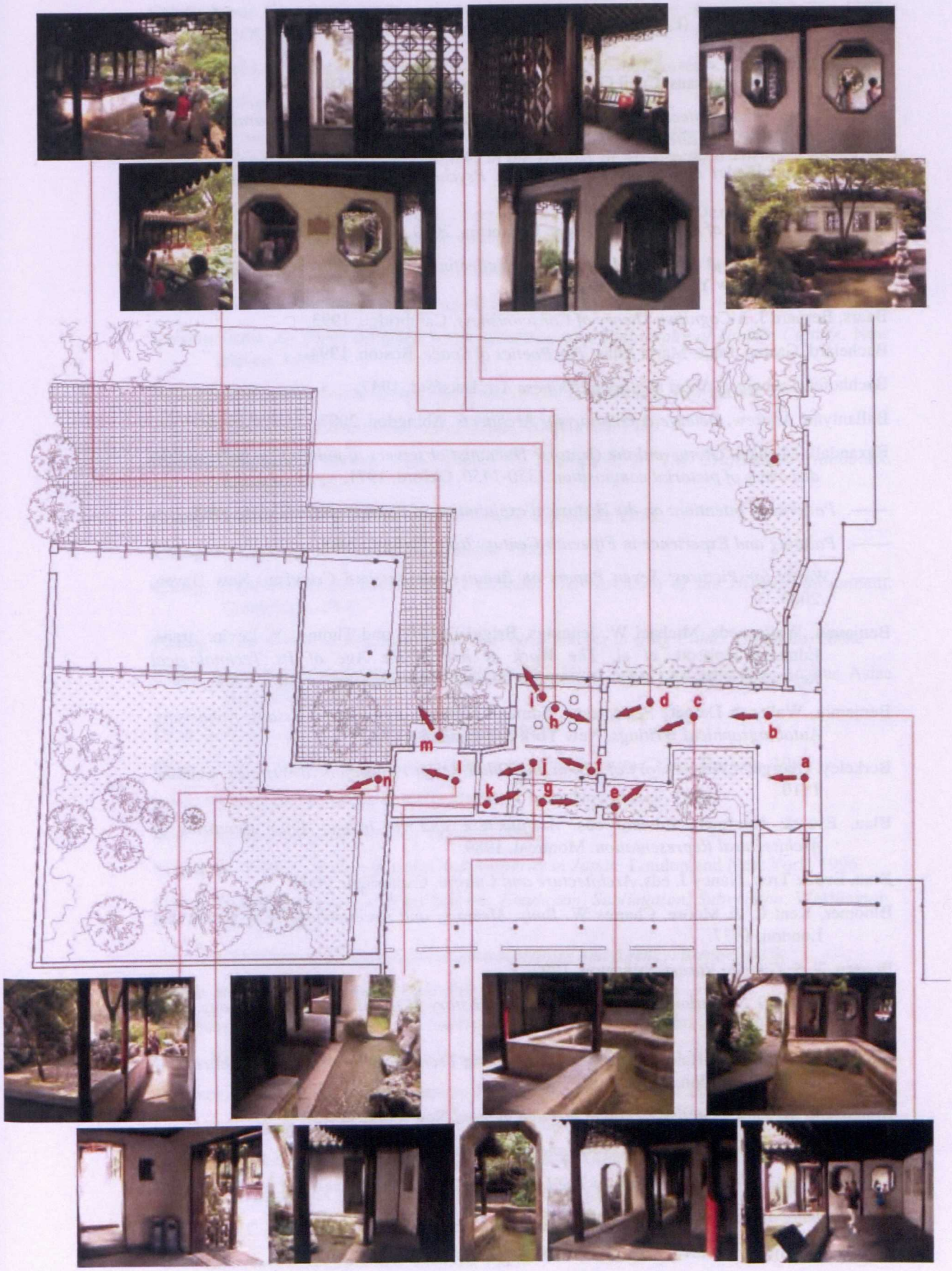


Adapted from a map in James Cahill, *The Distant Mountains – Painting in the Late Ming 1570-1644* (Weatherhill, New York and Tokyo). Quoted from *Crafts of the Garden* by Ji Cheng, trans.Alison Hardie (New Haven and London: Yale University Press, 1988)



Lingering Garden in Suzhou. Adapted from a map in Liu Dunzhen *Zhong Guo Gu Dian Yuan Lin* 中国古典园林 (China Building and Industry Press, 1979)

Appendix 6: Visual Sequence around *Green Shade*



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